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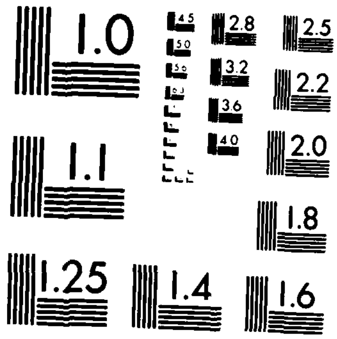

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AN EVALUATION OF THE EDUCATION AND TRAINING

OF MARINE CORPS COMBAT ENGINEER OFFICERS

THESIS

Harold Mashburn, Jr.
Major, USMC

AFIT/GEM/LSM/84S-13

DEPARTMENT OF THE AIR FORCE
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Wright-Patterson Air Force Base, Ohio

AFIT/GEM/LSM/84

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The education and training of Marine Corps Combat Engineer Officers is a process ~~that~~ must keep pace with the changing requirements of the modern battlefield. The process should be adaptive to meet the needs of the individual officers. Curriculum planners must know these needs to effectively plan programs of instruction.

The primary purpose of this evaluation was to identify the education and training needs of ~~Marine~~ Corps ~~Combat Engineer,~~ Officers. Each course of training was reviewed, and ~~the~~ curricula were examined. Previous task analyses conducted by the U.S. Army, ~~U.S.~~ Air Force and the U.S. Marine Corps were also reviewed, and their findings were used in the analysis of data. Questionnaires were sent to every Marine Corps officer with a primary or secondary engineer officer occupational specialty. Data collected and reported includes demographic information and perceptions of the relative importance of and training adequacy for combat engineer tasks, the program of instruction at The Basic School, and the program of instruction at the Marine Corps Engineer School.

Findings of this evaluation are useful to curriculum planners at every level of the education and training process for any occupational specialty. Education specialists are provided the perceived training needs of every company grade Marine Corps Combat Engineer Officer. Conclusions and recommendations include factors that influence individual perceptions of education and training needs, requirements for programs based on continuous needs assessment, and the career level school requirements of company grade Marine Corps Combat Engineer Officers.

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AN EVALUATION OF THE EDUCATION AND TRAINING
OF MARINE CORPS COMBAT ENGINEER OFFICERS

THESIS

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

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In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Engineering Management

Harold Mashburn, Jr., B.S.
Major, USMC

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Harold Mashburn, Jr.

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Abstract

The education and training of Marine Corps Combat Engineer Officers is a process that must keep pace with the changing requirements of the modern battlefield. The process should be adaptive to meet the needs of the individual officers. Curriculum planners must know these needs to effectively plan programs of instruction.

The primary purpose of this evaluation was to identify the education and training needs of Marine Corps Combat Engineer Officers. Each course of training was reviewed, and the curricula were examined. Previous task analyses conducted by the U.S. Army, U.S. Air Force and U.S. Marine Corps were also reviewed, and their findings were used in the analysis of data. Questionnaires were sent to every Marine Corps officer with a primary or secondary engineer officer occupational specialty. Data collected and reported includes demographic information and perceptions of the relative importance of and training adequacy for combat engineer tasks, the program of instruction at The Basic School, and the program of instruction at the Marine Corps Engineer School.

Findings of this evaluation are useful to curriculum planners at every level of the education and training process for any occupational specialty. Education specialists are provided the perceived training needs of every company grade Marine Corps Combat Engineer Officer. Conclusions and recommendations include factors that influence individual

perceptions of education and training needs, requirements for programs based on continuous needs assessment, and the career level school requirements of company grade Marine Corps Combat Engineer Officers.

AN EVALUATION OF THE EDUCATION AND TRAINING OF MARINE CORPS COMBAT ENGINEER OFFICERS

I. Introduction

This chapter contains a general background on the entry-level training of Marine Corps officers, the specialty training of Combat Engineer Officers, the diversity of tasks which Combat Engineer Officers must perform, and the problems that have resulted in developing training programs to meet actual job requirements. The specific purpose of this research is stated, and the specific research objectives and questions are listed. Also included are the scope of and limitations to this assessment.

Background

Each Marine Corps officer participates in entry-level training at The Basic School (TBS), which is a component of the Marine Corps Development and Education Command (MCDEC), Quantico, Virginia. All officers, male and female, aviation and ground, attend this school, and each receives a background in the basics of officership and Marine Corps warfighting methods and philosophy. This background includes courses in personnel and general administration, logistics, leadership, management, aviation, and a heavy emphasis on tactics and infantry weapons. The officers come to The Basic School with only two things in common: they all have a baccalaureate degree and they all want to be Marine Corps Officers.

Only two Military Occupational Specialties (MOS) can be guaranteed prior to commissioning. Individuals can qualify for guaranteed specialties of Naval Aviator and Naval Flight Officer by successfully completing aviation physical exams and the Academic Qualification Test/Flight Aptitude Rating (AQT/FAR) battery of tests. Until 1981 three other specialties, data systems, engineer, and communications/electronics were also sometimes guaranteed to individuals pursuing baccalaureate degrees with majors in those specific disciplines. These three specialties were guaranteed only in rare instances, according to the needs of the Marine Corps and the need to preclude shortages of officers with technical degrees.

Those officers who do not have a guaranteed Military Occupation Specialty prior to commissioning choose their specialties according to their class standing and the needs of the Marine Corps at the time their class graduates. Occupational specialties are selected and assigned regardless of previous academic preparation. Each officer then attends a functional training school for initial skill training in his or her occupational specialty.

Those officers selected or who choose to become Combat Engineer Officers attend the ten-week Combat Engineer Officer Course (CEOC) at the Marine Corps Engineer School, Camp Lejeune, North Carolina. The mission of this school is to train company grade officers as Combat Engineer Officers.

The majority of new Combat Engineer Officers are initially assigned to one of the three types of Fleet Marine Force engineer

commands: the Combat Engineer Battalion, which provides direct engineer combat support to the Marine Division (MarDiv); the Engineer Support Battalion, which provides engineer combat service support to the Force Service Support Group (FSSG) and to the Marine Amphibious Force (MAF); or the Wing Engineer Squadron (WES), which provides engineer combat service support to the Marine Aircraft Wing (MAW). Engineer combat support is that support provided by engineer forces to forces in contact with the enemy; it contributes to force mobility, hampers enemy mobility, or adds to the survival of friendly forces. Engineer combat service support is that support provided by engineer forces which contributes to meeting the logistical requirements of the friendly forces. Engineer combat service support includes mobile electric power, water, bulk fuel, and construction tasks.

The program of instruction (POI) of the Combat Engineer Officer Course at the Marine Corps Engineer School has evolved in response to the needs of the Fleet Marine Force. This evolution results from the application of Instructional System Development (ISD) procedures, the use of post-training questionnaires sent to recent graduates and their supervisors, and the feedback obtained during scheduled staff visits. The Instructional System Development process (discussed in more detail in Chapter II) was used to update the 1975 program of instruction. The latest program of instruction, which was implemented during October, 1983, resulted from a limited analysis of the actual training requirements of Combat Engineer Officers. Current doctrinal publications were reviewed and numerous meetings were held with incumbents to determine the

task inventory that should be included in the Combat Engineer Officer Course. Funding and geographical constraints greatly limited the scope of personal involvement by active duty Marine Corps Combat Engineer Officers (15:26).

Post-training questionnaires are routinely sent to Combat Engineer Officer Course graduates and their supervisors four to six months after graduation. On the average, sixty officers take the Combat Engineer Officer Course annually (five classes of 12 students per class). However, because the initial duty assignments of the respondents is varied and their number is relatively small, their responses have limited validity for planners (15).

Scheduled visits are conducted with engineer-type commands (Combat Engineer Battalion, Engineer Support Battalion, Wing Engineer Squadron). West coast units, which are components of the First Marine Amphibious Force (I MAF), are visited biennially. East coast units, which are components of the Second Marine Amphibious Force (II MAF), are visited biannually. The proximity of the II MAF units to the Marine Corps Engineer School makes it possible for the staff to conduct more frequent visits. The Japan-based engineer-type commands of the Third Marine Amphibious Force (III MAF) do not receive staff visits because of funding constraints (15).

In summary, the evaluation methods used by the Marine Corps Engineer School are primarily limited to I MAF and II MAF engineer-type commands, with the major emphasis being given to the II MAF commands on

the east coast. I MAF combat engineers are more concerned with Southwest Asia and mechanized operations, while II MAF combat engineers are concerned with European and amphibious operations. The probability that mission bias enters into the evaluation of course requirements is very high (15).

The diverse backgrounds of Combat Engineer Officers and the myriad tasks which must be performed in the various duty assignments make the problem of designing an adequate training program very complex. The Marine Corps Engineer School is limited in its evaluation techniques by fiscal constraints and practicality. The need for a complete evaluation of the education and training requirements of Marine Corps Combat Engineer Officers exists, and the research described in this report was undertaken to meet that need.

> Officers must know how to manage military forces in peacetime, and how to fight these forces in wartime; in some instances, the necessary skills for each requirement are dissimilar. In all instances, however, officers must use the peacetime period to prepare themselves for war fighting; this is at its best a vicarious experience, one of becoming accomplished in a little practiced art [4:III-2].

Purpose of This Study

This study examined the following topics:

- what tasks Marine Corps company grade Combat Engineer Officers actually perform.

- whether the Marine Occupational Specialty (MOS) Manual description of MOS 1302, Engineer Officer, is accurate.

- whether the company grade Combat Engineer Officers perceive that they receive adequate education and training to perform those tasks.

- how field grade Combat Engineer Officers perceive the education and training requirements of their subordinate officers.

Specific Objectives. The overall objective of this research was to gather sufficient data to identify areas in the entry-level and initial skills-training of company grade Combat Engineer Officers that require increased or decreased emphasis. Directed toward the accomplishment of this goal, the following specific research objectives of this study were to:

1. Determine what tasks company grade Combat Engineer Officers actually perform.

2. Determine the perceptions of field grade Combat Engineer Officers of the relative importance of tasks actually performed by company grade Combat Engineer Officers.

3. Determine if the Military Occupational Specialty description of MOS 1302, Engineer Officer, accurately describes tasks actually performed.

4. Collect the perceptions of company grade Combat Engineer Officers of the adequacy and relative importance of the education and training they have received since commissioning.

5. Collect the perceptions of field grade Combat Engineer Officers of the adequacy and relative importance of the current education and training programs.

6. Determine what factors affect individual perceptions of the Marine Corps Combat Engineer Officer education and training process.

Specific Research Questions. In order to accomplish the specific objectives (identified in parentheses in the following list), data was collected to answer the following research questions:

1. What are the tasks currently performed by company grade Combat Engineer Officers? (Objective 1)

2. What tasks do field grade Combat Engineer Officers perceive to be important with respect to effective completion of combat engineer assignments? (Objectives 2 and 5)

3. What are the perceptions of company grade Combat Engineer Officers about the adequacy of entry-level training received at The Basic School? (Objective 4)

4. What are the perceptions of field grade Combat Engineer Officers about the adequacy of entry-level training received at The Basic School? (Objective 5)

5. What are the perceptions of company grade Combat Engineer Officers about the adequacy of MOS training received at the Marine Corps Engineer School and through post-entry-level training programs? (Objective 4)

6. What are the perceptions of field grade Combat Engineer Officers about the adequacy of MOS training received at the Marine Corps Engineer School and through post-entry-level training programs? (Objective 5)

7. What is the effect of assignment on individual perceptions about required tasks and training adequacy? (Objective 6)

8. What is the effect of civilian education on individual perceptions about required tasks and training adequacy? (Objective 6)

9. What perceived source of training best prepares Combat Engineer Officers for combat engineer assignments? (Objectives 4 and 5)

10. What tasks or duties require additional emphasis in current education and training programs? (Objectives 4 and 5)

11. What tasks or duties require reduced emphasis in current education and training programs? (Objectives 4 and 5)

12. What is the effect of the Military Occupation Specialty (MOS) selection process at The Basic School on the perceptions about education and training adequacy of Combat Engineer Officers? (Objective 6)

13. What is the effect of the commissioning source on Combat Engineer Officer perceptions about individual education and training programs? (Objective 6)

14. What factors can be used to predict individual perceptions about the education and training of Marine Corps Combat Engineer Officers? (Objective 6)

Scope of Study

This study is limited to the evaluation of peacetime education and training requirements. Manpower, fiscal, and unit training constraints during peacetime add an unknown amount of bias to perceptions of company grade Combat Engineer Officers. However, the efforts of the Marine Corps to approximate contingency scenarios in training exercises add some credibility to the perceptions of both company and field grade Combat Engineer Officers. This study, however, does include the perceptions of field grade Combat Engineer Officers, the majority of whom have served in combat. Their perceptions as supervisors and combat veterans complement those of the less-experienced company grade officers.

This study attempted to collect the perceptions of every Marine Corps officer, second lieutenant to colonel, who has a primary or secondary 1302 Military Occupational Specialty. The relatively small number of Combat Engineer Officers (540) made a census feasible. Due to the obvious bias inherent in each engineer-type unit and within each Marine Amphibious Force, a sample survey would not have produced such reliable results.

Although the research project was approved by Headquarters, U.S. Marine Corps (HQMC), the report's conclusions and recommendations have not been staffed at that level and do not represent an approved position.

II. Literature Review

The purpose of this chapter is to review literature applicable to the education and training of company grade Marine Corps Combat Engineer Officers. The education and training process, including pre-commissioning and post-commissioning training, is reviewed. Possible duty assignments of Combat Engineer Officers and previous task analyses are discussed. Finally, the factors of the education and training process that possibly affect the level of Combat Engineer Officer performance capabilities are summarized.

Marine Corps Education and Training Philosophy

The Marine Corps education and training program consists of two distinct levels: entry-level and post-entry level. Entry-level education and training programs provide the knowledge and skills required by each individual upon initial entry into the Marine Corps. For officers, this level includes acquisition training and initial skill qualification training required for each Marine to qualify in a Military Occupational Specialty (MOS). Training received by officers making lateral moves from one occupational specialty to another is also included in this level. Post entry-level training programs provide the necessary training for individuals to maintain and develop the proficiency acquired during entry-level training. This training may be conducted at individual, unit, or institutional levels (34:1).

Specific categories or content areas exist within the broad context of overall training. The categories may be either individual or

collective. Individual training is the training a Marine officer receives in the unit or institutional environment which prepares him/her to perform specific duties and tasks related to a duty position or assigned Military Occupational Specialty (MOS). Collective training is that type of training which is conducted to prepare a group of individuals to accomplish tasks as a cohesive unit (34:2).

Marine Corps training categories that pertain to Combat Engineer Officer training are defined as follows:

a. Officer Acquisition Training is that training that leads to a commission as a Marine Corps officer. It includes officer candidate, service academy, and reserve officer training corps (ROTC) training.

b. Specialized Skill Training is that training which provides Marines with the knowledge and skills needed to perform specific jobs. It consists of *initial skill training*, skill progression training, and functional training. Each is defined below.

- Initial Skill Training is that training conducted subsequent to officer acquisition training which qualifies a Marine officer for a basic Military Occupational Specialty (MOS). Training received at the Combat Engineer Officer Course at the Marine Corps Engineer School qualifies a Marine officer for basic MOS qualification as an Engineer Officer.

- Skill Progression Training is that training received subsequent to initial skill training which provides additional knowledge and skills within an occupational specialty. This category includes correspondence courses, workshops, and short courses.

- Functional Training is that training which provides required specialty skills without changing the officer's primary occupational

specialty. Combat Engineer Officers who are assigned duties outside the engineer field receive training in this category. For example, foreign exchange officers receive foreign language training and Officer Selection Officers receive professional selling skills training from Xerox.

c. Mission-Oriented Training is that training which enables a Marine to perform his/her duties in support of a unit's mission. An example of such training is engineer training conducted with infantry units.

d. Professional Development Training is "that training and education which provides a Marine with the knowledge and attitudes necessary for increased grade and responsibility [34:4]." Included in this category is training received at the Engineer Officer Advanced Course (EOAC) and Amphibious Warfare School (AWS) (34:3-4).

The specific categories are prioritized

> to assist commanders to effectively and efficiently manage and conduct post entry-level training . . . accomplished in terms of the following priorities in descending order:
>
> - Mission-Oriented Training
> - Skill Progression Training
> - Functional Training
> - Professional Development Training (34:5).

Combat Engineer Officer Education and Training

The sequence of Marine Corps Combat Engineer Officer education and training is the same as that outlined in the preceding section. Officer acquisition training is provided by the various accession programs. Initial skill training is provided at The Basic School and at the Marine Corps Engineer School. The Amphibious Warfare School and The

Engineer Officer Advanced Course provide skill progression training. Each of these education and training stages is described below. Figure 2.1 provides a visual guide to assist the reader in placing the various components of the process within proper perspective.

> Training is a process in which the trainees are assisted in learning technical knowledge and skills so that they can become qualified and proficient in performing tasks.
> Educating is the process of assisting a person in developing mentally or morally.
> The distinction is different because each process calls for differing methods of instruction, amount and kind of student evaluation, extent of research and writing, and faculty/student ratios (4:III-16).

Marine Corps Officer Accession Programs. The Marine Corps does not actively recruit college students to fill specific technical billets. Instead, the Marine Corps believes that any individual who meets the academic and physical requirements for commissioning, and who has the desire to succeed can be educated and trained to meet current manpower needs. Once an individual is recommended for commissioning by an acquisition training course, meets the physical standards, and obtains a baccalaureate degree from an accredited college or university, he/she will be commissioned.

Approximately 58 percent of yearly officer accessions come directly from the college and university campuses in the Platoon Leaders Class (PLC) and Officer Candidate Course (OCC) programs (1).

The Platoon Leaders Class (PLC) program is for male freshmen, sophomores, and juniors attending accredited colleges and universities. Ground and aviation options are available. Those candidates in the

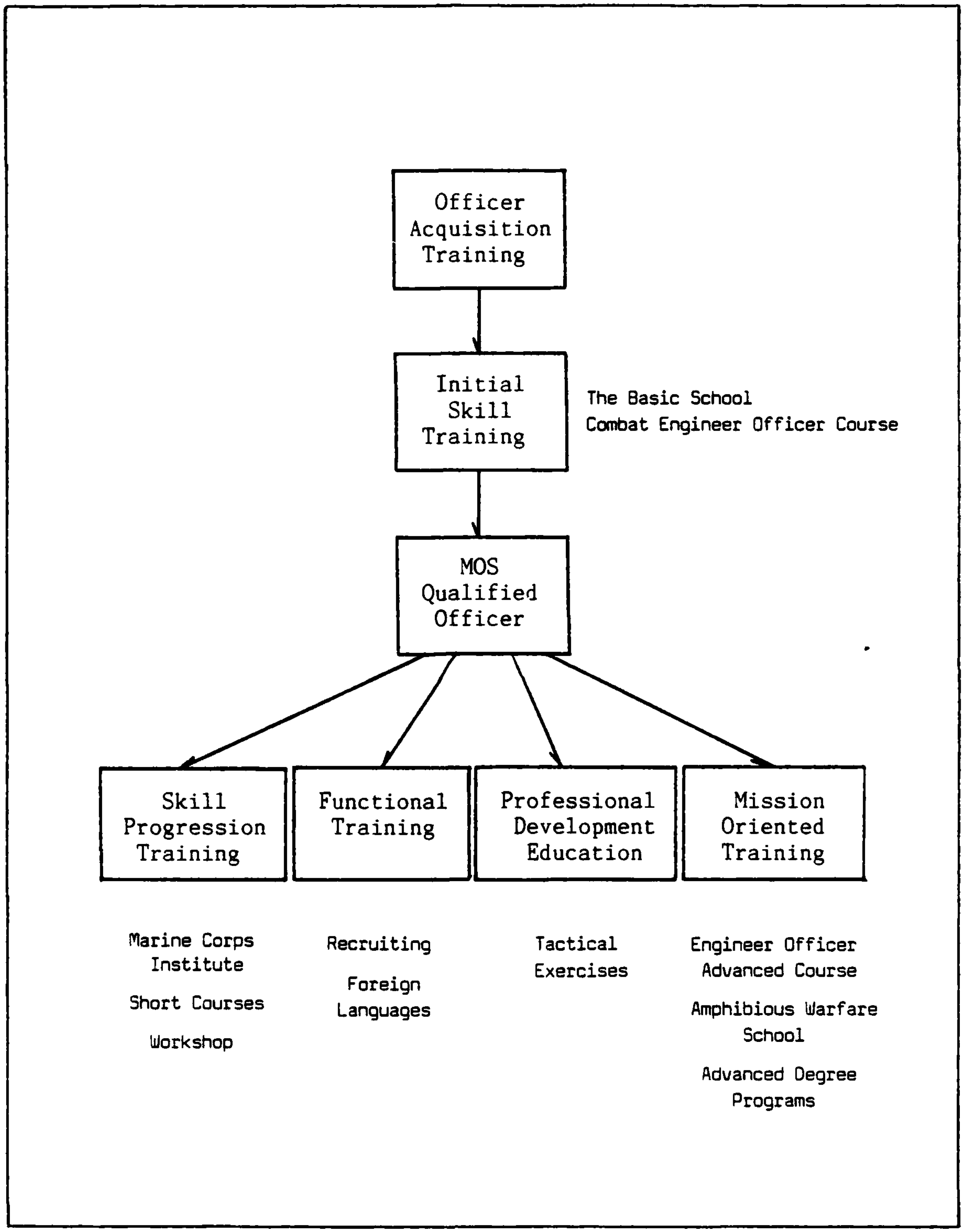


Figure 2.1. Sequence of Training (Adapted from 34:6)

aviation option are guaranteed occupational specialties as naval aviators or naval flight officers upon commissioning as long as they remain physically qualified. Pre-commissioning training is received during summer sessions at Quantico, Virginia. Freshmen and sophomores attend the six-week junior course during the summer after enrollment and the six-week senior course the summer before graduation. Juniors attend the 10-week combined course during the summer immediately before graduation. There are no required activities on campus during the school year. Longevity, for pay purposes, is accrued from the date an application is approved by Headquarters, U.S. Marine Corps (HQMC). This makes it possible for a PLC candidate to be commissioned with three and one-half years of longevity. Additionally, each PLC candidate, upon completion of one summer training session, is eligible to apply for a one hundred dollar per month stipend, up to a maximum of nine hundred dollars per academic year for three years.

The Officer Candidate Course (OCC) is a pre-commissioning program for male seniors either attending or having graduated from accredited colleges and universities. The officer candidates attend a 10-week course, comparable to the PLC combined course, to qualify for commissioning.

Approximately 25 percent of yearly officer accessions are from the two four-year training programs: the U.S. Naval Academy and the Navy Reserve Officer Training Corps (Marine Option) (1).

One-sixth of the U.S. Naval Academy (USNA) graduating class is eligible to choose commissioned service in the Marine Corps. The

midshipmen select their duty preferences during the last half of their fourth academic year in the order of their overall class standing. Class standing is based on academic, leadership, and conduct evaluations.

Navy Reserve Officer Training Corps (Marine Option) candidates attend one of the 66 colleges and universities that offer the program. They receive full tuition subsidies and a monthly stipend of one hundred dollars. One-sixth of the candidates of the Navy programs are Marine Option students. Academic classes and drill sessions are conducted during the school year, and summer training sessions similar to those described for PLC candidates prepare the midshipmen for commissioning.

Approximately 16 percent of yearly officer accessions come from Marine Corps enlisted personnel through the channels described below (1).

- The Warrant Officer Program provides exceptional enlisted personnel with the opportunity to become warrant officers in certain specialty areas. A selection board annually selects warrant officers from qualified applicants. The engineer specialities included in the program are 1120 (Utilities Officer), 1310 (Engineer Equipment Officer), 1360 (Construction Officer), and 1390 (Bulk Fuel Officer) (30:2-4).

- The Enlisted Commissioning Program (ECP) provides a small percentage of commissioned officers from highly qualified enlisted personnel who may or may not possess a baccalaureate degree. Upon selection by a board, the candidates attend the 10-week Officer Candidate Course (OCC) pre-commissioning training session at Quantico, Virginia.

After commissioning, the new officers attend The Basic School (TBS), as do all newly commissioned officers (29:2-5).

o The Marine Enlisted Commissioning Education Program (MECEP) offers qualified enlisted personnel the opportunity to earn a baccalaureate degree in technical and non-technical areas prior to commissioning. Thirteen technical areas of study are available, including civil and industrial engineering. Nine non-technical areas of study are available, including economics and business administration. An annual board selects those applicants who have demonstrated academic potential through previous college work or aptitude tests. After graduation the candidates attend the 10-week OCC training session, followed by TBS (31:2-8).

The remaining source of officers, the Woman Officer Candidate (WOC) Course, provides approximately one and one-half percent of annual officer accessions. Woman officers are not eligible for the 1302, Engineer Officer, Military Occupational Specialty since it is classified as a Combat Arm.

Table 2.1 includes the tentative Marine Corps accession plans by program for three fiscal years.

The Basic School (TBS). The mission of The Basic School, which is a component of the Marine Corps Development and Education Command (MCDEC), Quantico, Virginia, is "to provide the officer student the basic knowledge, skills, and establishment of goals required of every Marine Corps officer [38:I-1]." In accomplishing its mission, The Basic School strives during the Basic Officer Course (BOC) to

provide newly commissioned officers a basic professional education prior to specific skill training in a military specialty, and to instill in them the esprit and leadership traditional to the Marine Corps, in order to prepare them to assume the duties and responsibilities of a company grade officer in the field and in garrison, in peacetime or in war. The goals of the course of instruction are:

(1) To develop a basic understanding of infantry war-fighting skills so that the graduate can:

- more effectively support ground combat operations when assigned to non-infantry specialties.

- plan, coordinate, and conduct/supervise local security and rear area defense operations including limited offensive operations for non-infantry organizations.

- assume the duties of an infantry platoon commander under emergency conditions to replace casualties in combat operations.

(2) To develop an understanding of and commitment to the leadership responsibilities and standards of conduct expected of a Marine officer.

(3) To educate the officers on the structure, values, and philosophy of the Marine Corps and, thereby, to develop a unity of purpose shared by the entire leadership of the Corps (38:I-1, I-2).

TABLE 2.1

Three-Year Marine Corps Officer Accession Plan (Source 1)

Source	FY-84	%	FY-85	%	FY-86	%
PLC	760	43.16	650	38.97	650	39.51
OCC	220	12.49	180	10.79	150	9.72
USNA	170	9.65	183	10.79	170	10.33
NROTC(MO)	280	15.90	300	17.98	325	19.76
WO	217	12.33	230	13.79	230	13.98
ECP	55	3.12	60	3.60	60	3.65
MECEP	34	1.93	40	2.40	40	2.43
WOC	25	1.42	25	1.50	20	1.22
Total	1761		1668		1645	

The Basic Officer Course (BOC) is designed "to provide instruction in the subjects that have been identified as the most important for newly commissioned officers to perform their future duties [38:I-2]." During every phase of instruction the students are exposed to the intangible traits and characteristics that distinguish them as officers of Marines. The instruction "instills in the lieutenants the motivation, mental toughness, self-discipline, esprit, determination, and standards of conduct required in Marine officers [38:I-3]."

The program of instruction for the Basic Officer Course spans 23 weeks, or 115 training days. The academic subjects taught during the course are shown in Table 2.2. Appendix A contains a complete description of the academic subjects. Appendix B includes the task inventory for the program of instruction.

During the latter half of the course those officers who do not have guaranteed specialties choose their Military Occupational Specialties (MOS). The specialties are selected by the students according to their class standings and the needs of the Marine Corps. Class standings are based on the results of academic, leadership, and professional evaluations. The class and the requirements for each MOS are divided into thirds to insure that each specialty gets a representative group of new officers. Each student submits a list of three MOS choices in order of preference. The preferences are filled in order if MOS slots are available. The process continues until each officer has a specialty and the manpower requirements of the Marine Corps are met (12).

TABLE 2.2
Program of Instruction of
The Basic Officer Course (Source 38:II-1, II-2)

Subject Area	Hours	Percentage
Academic		
Map Reading and Land Navigation	30.00	2.46
Communications	10.00	0.80
Intelligence	6.00	0.50
Combat Service Support	3.00	0.25
First Aid	5.50	0.45
Physical Training and Conditioning	108.50	8.90
Leadership	222.50	18.26
Drill, Command, and Ceremonies	33.00	2.70
History, Traditions, Roles and Missions	3.00	0.25
Military Law	17.00	1.39
Amphibious Operations	74.25	6.10
Nuclear, Biological, and Chemical Defense	28.00	2.30
Tactics	262.50	21.55
Supporting Arms	14.00	1.15
Weapons	36.00	3.00
Marksmanship	71.00	5.83
Aviation	17.00	1.39
Field Engineering	16.50	1.35
Company Instruction Time	71.00	5.83
Evaluations	59.75	4.90
Academic Totals	1088.50	89.36
Non-Academic		
Administrative Time	47.50	3.90
Movement Time	39.25	3.21
Recovery Time	43.00	3.53
Non-Academic Totals	129.75	10.64
Course Total	1218.25	

Table 2.3 includes the Military Occupational Specialty (MOS) distribution plans for fiscal years 1983 and 1984. The percentage of assignable officers is a goal which limits the number of officers that can be assigned to any one occupational specialty (1). Assignable officers are those who were not commissioned with a guaranteed specialty, including those who were dropped from flight training.

Marine Corps Engineer School (Combat Engineer Officer Course). The mission of the Combat Engineer Officer Course is to train company grade officers as Combat Engineer Officers. It fulfills the requirement for initial skill training, "that training undertaken by each Marine subsequent to . . . officer acquisition training to initially qualify for a basic Military Occupational Specialty [39:3]." Upon graduation, Combat Engineer Officers are given a 1301 Military Occupational Specialty (MOS), which signifies that they have *a basic specialty*. They obtain the 1302 MOS, Engineer Officer, after successfully completing six months of duty in an engineer billet and receiving a recommendation from their commanding officer.

The Combat Engineer Officer Course is ten weeks (46 training days) long, and "consists of performance-based instruction oriented toward battlefield mobility, counter-mobility, survivability, and general engineering [39:I-1]." The task inventory that forms the basis of the course of instruction was derived through analysis and is continually validated through student post-training questionnaires and supervisor evaluations. The analysis consists of scheduled staff visits to

TABLE 2.3

Military Occupational Specialty Distribution Plan
for Assignable TBS Graduates (Source 1)

Military Occupational Specialty		% of Assignable Officers		Anticipated Numbers	
		FY-83	FY-84	FY-83	FY-84
0180	Administration	--	--	--	--
0202	Intelligence	--	--	--	--
0302	Infantry	29.0	30.3	340	333
0402	Logistics	4.8	5.1	57	56
0802	Artillery	16.0	16.2	188	178
1302	Combat Engineer	2	4.3	50	47
1802	Armor	4.0	4.0	47	44
1803	Amphibious Vehicles	3.0	2.9	35	32
2502	Communications	6.9	7.2	82	79
2602	Electronic Warfare	2.0	1.8	23	20
3002	Ground Supply	6.9	7.5	81	82
3060	Aviation Supply	3.0	2.6	35	27
3402	Disbursing	2.1	2.1	25	25
3415	Financial Management	--	--	--	--
3502	Motor Transport	4.9	5.3	58	58
4002	Data Systems	1.5	1.6	18	18
4302	Public Affairs	--	--	--	--
5802	Military Police	--	--	--	--
6002	Aircraft Maintenance	1.4	1.6	16	18
7204	Anti-Aircraft Warfare	2.0	2.2	24	24
7208	Air Control	2.5	2.5	30	28
7210	Air Defense Control	1.7	1.8	20	20
7320	Radar Approach Control	1.0	1.0	11	11

engineer-type commands throughout the Marine Corps and frequent telephone liaison with commands receiving graduates (39:I-1, VII-2). Figure 2.2 contains the current Combat Engineer Officer Course task inventory.

- Conduct Mobility Enhancing Operations
  - Bridge gaps
  - Reduce obstacles
  - Maintain lines of communication
  - Establish tactical landing zones

- Conduct Countermobility Operations
  - Plan obstacles
  - Employ minefields
  - Construct obstacles

- Promote Survivability
  - Construct field fortifications
  - Apply countersurveillance measures
  - Mask unit movement

- Administer General Engineering Skills
  - Construct a base camp
  - Construct a concrete structure
  - Determine equipment technical publications
  - Requisition repair parts
  - Complete equipment records
  - Complete input transactions

Figure 2.2 Combat Engineer Officer Course Task Inventory
(Adapted from 39:VI-1)

The current program of instruction (POI) of the Combat Engineer Officer Course was developed by using the Instructional Systems Development (ISD) process to revise the 1975 program.

> The ISD system provides for knowledge-based instruction courses that are tested via a mastery/non-mastery concept. Programs of Instruction (POI) are developed from a thorough task analysis of required jobs to be performed, [sic] thus the ISD system provides enabling and terminal learning objectives for each job. By using this system our curriculum is organized to show what is intended to be taught and what specifically each student is expected to learn (26.1)

The Instructional Systems Development (ISD) process is a systematic approach to determining needs, developing solutions to those needs, implementing the solutions, and continually evaluating the degree to which the needs are met (38:VIII-1). The process, which is used by all Marine Corps formal schools, consists of the following phases:

a. Analyze

- identify what the student should learn
- identify and verify tasks that the graduate will be expected to perform
- review existing task inventories, learning objectives, and program of instruction.

b. Design - formulate learning objectives, program of instruction, and lesson plans.

c. Develop - develop training package.

d. Implement.

e. Evaluate

- internal - testing, instructional quality

- external - field visits, telephonic liaison, result of external changes (new equipment, force structure changes, directions from higher headquarters) (38:VIII-1-3).

The external evaluation forms used for the Combat Engineer Course are included in Appendix C.

Table 2.4 includes the subjects taught and the hours devoted to each subject in the 1975 program of instruction of the Combat Engineer Officer Course. Appendix D contains descriptions of the scope of each subject.

TABLE 2.4

1975 Combat Engineer Officer Course Subjects
(Adapted from 39:2)

Subjects	Hours
Academic	
Engineer Equipment	36
Field Construction	43
Routes of Communication	60
Management and Job Planning	13
Demolitions	36
Landmining Warfare	38
Field Fortification and Camouflage	11
Academic Total	235
Non-Academic	
Orientation/Graduation	3
Administrative Time	18
Non-Academic Total	21
Course Total	256

The 1975 program of instruction was revised in the early 1980s for the following reasons:

a. Course revision was required by the Marine Corps Development and Education Command to conform to the Instructional Systems Development (ISD) format.

b. The Combat Engineer Officer Course had to be designed to fit the seven-hour training day now in effect at the Marine Corps Engineer School.

c. The Commanding Officer and the academic personnel decided that the Combat Engineer Officer Course should focus on the supervisory and management aspects of the job in addition to the required fundamentals of combat engineering (15; 26:1).

Table 2.5 includes the subjects and hours devoted to each in the current Combat Engineer Officer Course program of instruction, which became effective in October, 1983. Appendix E contains a description of the scope of each subject.

Every effort is made to insure that each Marine Corps Engineer Officer attends the Combat Engineer Officer Course. Due to the graduation dates of The Basic School, class loading restrictions, and lateral occupational specialty moves by officers with other Military Occupational Specialties, some students experience delays in school attendance. If the delays extend beyond the point when an officer acquires a primary specialty of 1302, Engineer Officer, through on-the-job training, attendance at the school is usually considered unnecessary (12:15).

TABLE 2.5

Current Combat Engineer Officer Course Subjects
(Adapted from 39:II-1)

Subjects	Hours
Academic	
Mobility	123
Countermobility	38
Survivability	11
General Engineering	84
Evaluations	60
Academic Total	316
Non-Academic	
Administrative Time	39
Physical Fitness	29
Non-Academic Total	67
Course Total	383

Amphibious Warfare School (AWS). The Amphibious Warfare Course is a career level course which is classified as officer Professional Military Education (PME) for captains of any occupational specialty. The mission of the school is "to prepare Marine Corps captains and other selected officers for the conduct of amphibious operations at the MAU/MAB level [37:I-1]."

The Marine Amphibious Unit (MAU) and Marine Amphibious Brigade (MAB) are two forms of the basic Marine Corps fighting organization, the Marine Air Ground Task Force (MAGTF). A MAGTF consists of three elements: the Ground Combat Element (GCE), which is formed with an infantry

battalion from the Marine Division as the nucleus; the Aviation Combat Element (ACE), which is formed from components of the Marine Aircraft Wing; and the Combat Service Support Element (CSSE), which is formed from elements of the Force Service Support Group (41).

A Marine Amphibious Unit (MAU) is a task-organized Marine Corps combat force that usually includes a reinforced infantry battalion, an aviation element, and support forces. Figure 2.3 shows the composition of a typical MAU.

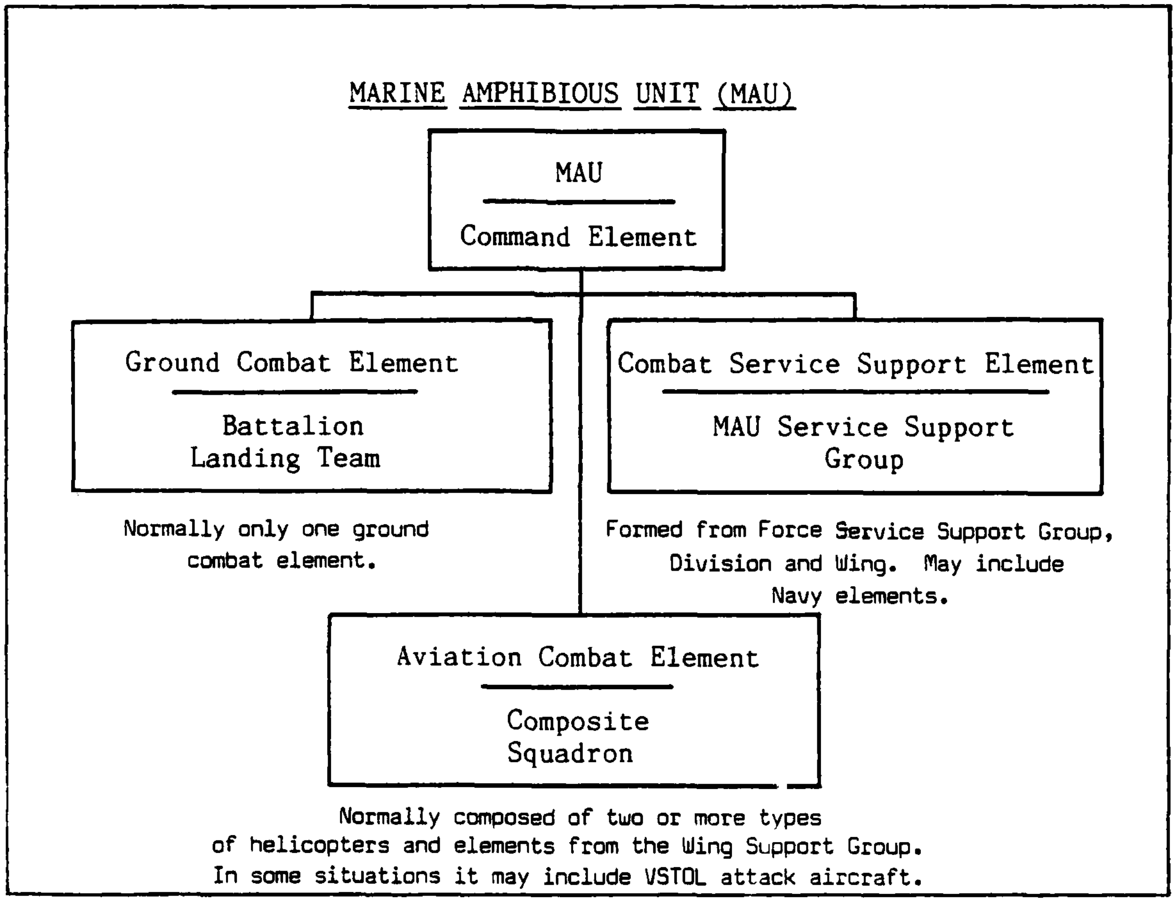


Figure 2.3 Composition of a Marine Amphibious Unit (MAU)
(Adapted from 41:42)

A Marine Amphibious Brigade (MAB) is a larger MAGTF, with a reinforced infantry regiment (three infantry battalions) as the nucleus of the ground combat element. The composition of a typical MAB is in Figure 2.4.

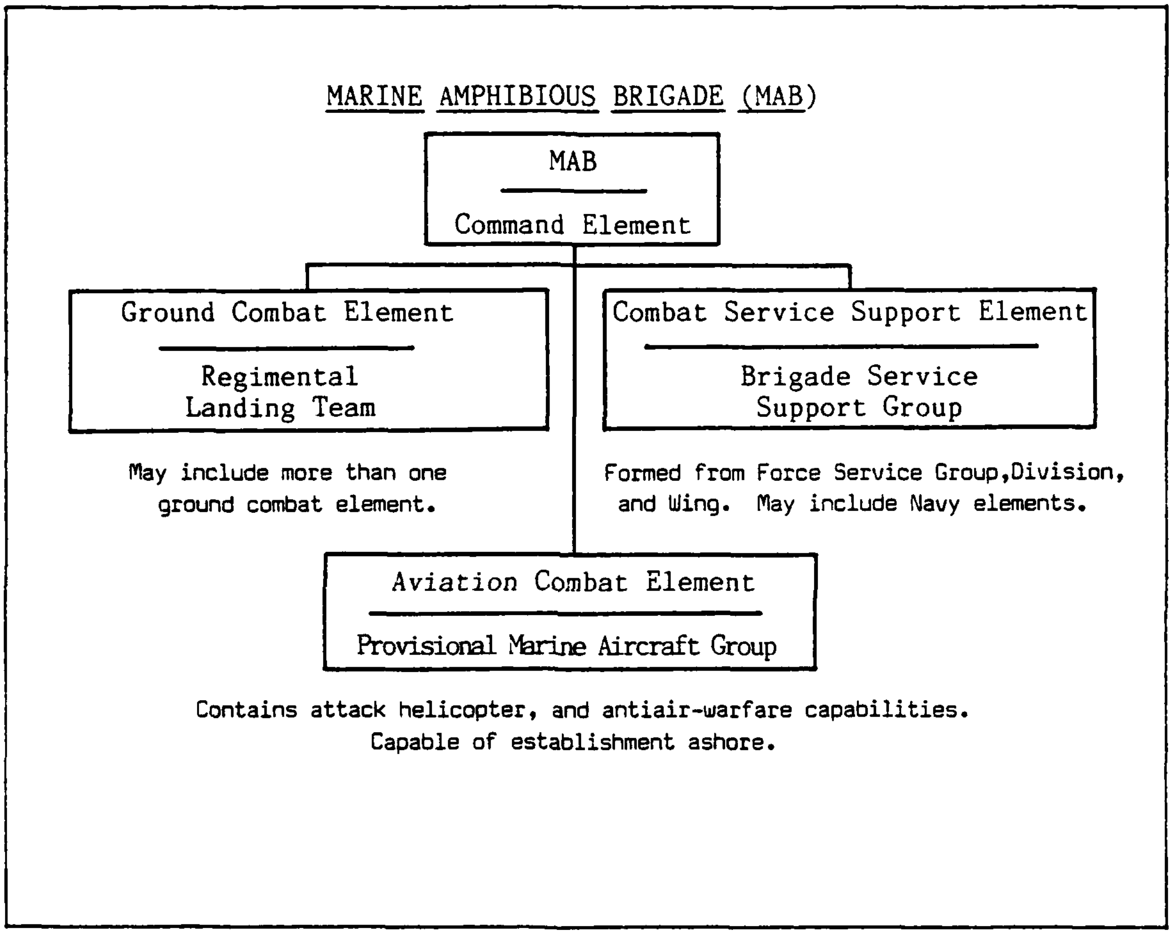


Figure 2.4 Composition of a Marine Amphibious Brigade (MAB)
(Adapted from 41:43)

The Amphibious Warfare Course consists of 195 training days (39 weeks). The specific curriculum of the course is included in Table 2.6. A description of the academic subjects is included in Appendix F.

TABLE 2.6

Amphibious Warfare Course Curriculum (Adapted from 37:II-1)

Subjects	Hours
Academic	
Tactics	384.0
Operations	335.0
Command and Management	313.0
Battle Studies	52.0
Occupational Field Expansion Course	126.0
Enrichment Lectures	46.5
Academic Total	1256.5
Non-Academic	
Director/Faculty Advisor Time	63.5
Physical Excellence Program	170.0
Holidays	120.0
Non-Academic Total	353.5
Course Total	1610.0

The academic subjects of the Amphibious Warfare Course include specific tasks that determine the instruction policies. The curriculum was developed by using the Instructional Systems Development (ISD) process. The task inventory of the course is included in Appendix G.

The Amphibious Warfare Course offers Combat Engineer Officers the opportunity to share their professional knowledge and experience with officers of other occupational specialties and to obtain an in-depth appreciation of the functions of those specialties. However, only three Combat Engineer Officers currently attend this career-level course each year. This is approximately five percent of the combat engineer captains

eligible to attend a career-level school. Eligibility is determined by the following factors (12):

a. Captain or captain-selectee.

b. Minimum of two years at current duty station (three years if on such duty as recruiting or officer selection), or with an appropriate Rotation Tour Date (RTD) if on an unaccompanied (remote) 12-month tour of duty.

c. Competitive Officer Qualification Record (OQR).

Engineer Officer Advanced Course. The mission of the Engineer Officer Advanced Course (EOAC), which is conducted at the U.S. Army Engineer School, Ft. Belvoir, Virginia, is

> to prepare Engineer Officers to be technically, tactically and administratively competent Company Commanders and Battalion Staff Officers (including a refresher at platoon level). Emphasis is placed on the management of training [8:i].

The Engineer Officer Advanced Course, which consists of 26 weeks (1040 hours) of training, is attended by most of the eligible Marine Corps combat engineer captains who attend a career-level school (14 of the 17 attendees during fiscal year 1984) (12). The prerequisites of the current EOAC are broad enough to allow the attendance of Marine Corps Combat Engineer Officers, requiring only training in the basic level Combat Engineer Officer Course (8:i). The subject areas taught during the EOAC are included in Table 2.7. Appendix H includes the specific courses taught during each block of instruction.

A radical change in the program of instruction has been recommended for implementation during October, 1984. The new course

TABLE 2.7

Engineer Officer Advanced Course Curriculum
(Adapted from 8:ii)

Subject	Hours
Academic	
Management and Leadership	68
Automatic Data Processing Systems (ADPS)	18
Unit Management	72
Engineers in Tactical Operations	66
Defensive Operations	97
Offensive Operations	100
Engineers in Combat	33
Organization and Functioning of the Corps of Engineers	26
Horizontal Construction and Engineer Management	182
Structures and Utilities	69
Engineers in Construction Support	44
Professional Development Briefings	29
Academic Total	804
Non-Academic	
In-processing	24
Out-processing	8
Physical Conditioning	78
Commandant's Time	70
Open Time	56
Non-Academic Total	236
Course Total	1040

incorporates techniques that will enhance the training of active and reserve U.S. Army engineer officers while minimizing the time they spend away from their units (11). Related lessons of the current course will be divided into two-week modules, which will enable reserve officers to

attend selected modules during their two-week Active Duty Training (ATD) periods (9:2). The mission of the new course is "to train selected officers to perform effectively in engineer company grade assignments such as battalion staff, brigade engineer, assistant division engineer, and company commander [9:3]."

The new course, which is awaiting approval by the Department of the Army, incorporates computer-based instruction (CBI) and the philosophy that each prospective student must pass an eight-hour diagnostic examination to measure his/her mastery of Military Qualification Standards (MQS), Level II. (MQS is discussed later in this chapter under the U.S. Army Review of the Education and Training of Officers.) Prospective students who do not satisfactorily complete the MQS II exam will be required to demonstrate adequate proficiency by successfully completing additional correspondence or residence courses (9:3; 12:2).

Computer-based instruction (CBI) figures prominently in the long-term planning of the education and training of Army Combat Engineer Officers. An educational network will be developed to allow students to interact with the school for initial learning, refresher training, problem solving, drill and practice, and communicating by electronic mail from remote locations (11:3). Much of the learning which now requires resident training could be accomplished in a non-resident mode.

The length of the new course will be 20 weeks (706 total classroom instruction hours) and will be divided into two-week modules. The primary emphasis of training will be teaching the skills included in Military Qualification Standards, Level III (Captains) (11:3).

The new EOAC contains many more small-group (10-12 students) training exercises. The small groups were designed to incorporate the idea of "wellness," which can best be defined as developing mind, body, and spirit to enhance individual potential and job satisfaction. "Wellness" instruction will include such topics as personal assessment and goal-setting, stress management, time management, physical conditioning, control of substance abuse, and diet and nutrition (9:3; 11). "Captain's skills such as planning, managing, and leading are integration skills best taught by doing [11:1]."

The new EOAC program of instruction incorporates the task listing of Military Qualification Standards III, which resulted from the recommendations of the Review of the Education and Training of Officers (RETO) conducted during the late 1970s. The course summary of the recommended course is included in Table 2.8. Appendix I contains the tasks that will be job performance standards during the course.

The Marine Corps Institute. The Marine Corps Institute (MCI) provides occupational specialty education to Marines of all ranks through correspondence study. The courses are offered for both individuals and groups. Unit training officers monitor student progress and administer examinations. Courses are available in a variety of occupational areas, as shown by the list of available courses in Appendix J. Specific engineer-related courses are included in Figure 2.5.

The Marine Corps Institute also provides professional military education courses at the staff noncommissioned officer and officer levels. These courses include the following:

TABLE 2.8

Course Summary - Proposed Engineer Officer Advanced Course
(Adapted from 9:5-6)

Subject	Instruction Hours	Homework Hours
Academic		
Leadership and Professional Skills	60	20
Combined Arms Doctrine Foundation	66	30
Combined Arms Defense	70	21
Combined Arms Offense	84	17
Lines of Communication I	69	28
Lines of Communication II	77	25
Basecamps and Contingencies	58	26
Staff Engineering/Operations	75	4
Personnel and Administration	39	19
Engineer Intelligence and Reconnaissance	31	5
Engineer Equipment Maintenance	35	2
Supply and Logistics	42	6
Academic Total	706	203
Non-Academic		
In-processing	8	
Out-processing	8	
Physical Fitness Training	60	
Commandant's Time	42	
Non-Academic Total	118	
Course Total	824	203

Utilities

The Refrigeration Mechanic
Air Conditioning
Fundamentals of Electricity
Installation, Operation, and Operator's Maintenance of Diesel Engine-Driven Generators
Field Water Supply
Field Plumbing and Sewage Disposal
Installation, Operation, and Organizational Maintenance of the Floodlight Set, Dummy Load, and Solid State Convertor

Engineer, Construction Equipment and Landing Support

Combat Engineer Noncommissioned Officer
Engineer Equipment Chief
Basic Engineer Equipiment Mechanic
Engineer Equipment Operator
Metal Working and Welding Operations
Math for Marines
Fundamentals of Diesel Engines
Shore Party Man: Helicopter Operations
Bulk Fuel Man
Combat Engineer Chief: Construction Support
Engineer Equipment Mechanic
Engineer Forms and Records
Construction Print Reading
Crane and Excavator Operator
Basic Combat Engineer
Shore Party Man: Beach Operations

Figure 2.5. Marine Corps Institute Engineer-Related Courses (Adapted from 32:II-ii)

a. Staff Noncommissioned Officer Academy Career Non-Resident program (SNCOACNP).

b. The Basic School Nonresident Program (TBSNP).

c. Amphibious Warfare School Nonresident Program (AWSNP).

d. Command and Staff College Nonresident Program (C&SCNP) (32: II-v, II-vi).

The courses offered under each of these programs are contained in Appendix K.

Combat Engineer Officer Duty Assignments

Marine Corps Order P1200.7D, Military Occupational Specialty (MOS) Manual, outlines career development for each occupational specialty. The manual provides general guidance for determining and requesting duty assignments. "The assignments . . . should provide a well-balanced foundation for career broadening experiences to prepare for future assignments of increased responsibility [35:1-7]." Table 2.9 includes the career development guide for Marine Corps Engineer Officers.

The following Military Occupational Specialty (MOS) description contains a list of the duties and tasks Combat Engineer Officers are expected to perform:

> Summary: The engineer officer commands or assists in commanding an engineer unit.
>
> Duties and Tasks: Directs tactical employment of an engineer unit in combat, on maneuvers and on tactical problems. Makes estimates of the situation and formulates and executes plans of action. Directs and coordinates engineer activities, such as construction, demolitions, utilities, mapping and equipment operation and repair. Coordinates engineer activities with those of other engineer units and with activities of units supported. Directs establishment and maintenance of routes of communication, camouflaging of installations and equipment and protection of equipment against chemical and radiological attack. Directs requisitioning and distribution of personnel, weapons, equipment, ammunition and supplies. Directs preventive maintenance effort and ensures authorized repairs to weapons and equipment [35:2-27].

The career development of Marine Corps Combat Engineer Officers includes assignments in Fleet Marine Force (FMF) and non-FMF billets.

Table 2.9

Military Occupational Specialty 1302 Career Development Guide
(Source 36:2-30)

Duty	Lieutenant	Captain	Major	Lieutenant Colonel
Non FMF	Marine Barracks, OIC TBS, Education Center, MCDEC, Quantico, VA Platoon Leader MCB, Camp Lejeune, NC Range Officer MC Engr School, MCB, Camp Lejeune, NC Admin Officer Asst Opn/Trng Officer Student, TBS Student, Marine Corps Engineer School	HQMC, Washington, DC Engr Equip Off Planning Off Project Off Marine Corps Engr School Academic/Opn Off Exec Off, Schools Co I&I Staff Insp-Instr MCAS, Cherry Point, NC Facilities/Dev Off MCAS, Kaneohe, HI Facilities Spt Off Student, Career Level School	HQMC, Washington, DC Engr Equip Off Facilities Off MCLB, Barstow, CA Maint Off MCLB, Albany, GA Plans/Opns Off Camp Smith, HI - Fac Engr Off, S-4 Education Ctr, MCDEC Engr Instr Development Ctr, MCDEC Combat Engineer Engr Off Intermediate Level School	HQMC, Washington, DC Engineer Officer MCLB, Barstow, CA Dir, Fac and Serv Div Development Center, MCDEC Engineer Officer MC Engr School Executive Officer MCB, Camp Butler, Ckinawa, Japan - Maint Off I&I Staff Insp-Instr Top Level School
FMF	FSSG - Engr Spt Bn Asst S-3 Plt Cdr, Exec Off, Engr Co Division - Cbt Engr Bn Asst S-3, Asst S-4 Plt Cdr, Exec Off, Cbt Engr Co	FSSG - Engr Spt Bn Asst S-2, Asst S-3 Co Cdr, Engr Co Exec Off, Spt Co Division - Cbt Engr Bn S-2, Asst S-3 Co Cdr, Engr Co Exec Off, Engr Spt Co Wing - Engr Off, Asst Opns Off, WES Logistics Off/MMO, Det A, MWSG-17	FSSG - Asst Engr Off Engr Spt Bn - S-2, S-3, S-4, Exec Off, CO-Engr Spt Co, MMO Division - Cbt Engr Bn Exec Off, S-3, S-4, MMO CO, Engr Spt Co Wing - WES Exec Off, Opns Off, Sect Cdr FMFPAC - Engr Equip Off, Fac Maint Off	FSSG Engineer Officer Bn Cdr, Engr Spt Bn Division Division Engr Bn Cdr, Cbt Engr Bn Wing CO, WES FMFPAC Engineer Officer Facilities Off FMFLANT - Engineer Off

The majority of the FMF assignments are located in the three engineer-type commands: the Combat Engineer Battalion, the Engineer Support Battalion, and the Wing Engineer Squadron. The non-FMF billets include staff positions, independent duty, and appropriate level schools (36: 2-30).

Fleet Marine Force (FMF) Assignments.

Combat Engineer Battalion. The primary mission of the Combat Engineer Battalion is "to render close combat engineer support to the Marine Division [28:1; 29:15]." The Combat Engineer Battalion provides both tactical and logistical engineer support to the division. It is organized to provide one combat engineer company in support of each infantry regiment and associated task elements, and one combat engineer company to support rear area organizations. The latter also provides the flexibility to augment the combat engineer companies in the forward areas as required by the tactical situation. Operations of those companies supporting forward elements will generally be decentralized. Engineer support requirements to the rear of forward elements will be performed under centralized engineer battalion control. The engineer support company provides augmentation in the form of personnel and specialized engineer equipment to the combat engineer companies. The organization and equipment of the Combat Engineer Battalion are based upon the criteria listed below:

a. The fact that construction support normally will be limited to essentials, be temporary in nature, and be designed to minimum standards to meet combat requirements.

b. The requirement to provide utilities support in the areas of water supply and other hygienic services for the Marine Division.

c. The fact that supply support within the Marine Division will be only partially dependent upon ground transport, a factor that precludes the need for an organic capability to prepare a complete road network for support of all division units (27:28-29).

The doctrine of engineer employment, which has been collected and published by the Marine Corps Development and Education Command (MCDEC) but is insufficient for current needs (42:1-2), states that the following tasks are performed by the Combat Engineer Battalion:

- Conduct engineer reconnaissance within the Division zone of action or sector of defense.

- Perform temporary repair of existing roads and limited new construction of engineer roads, including essential maintenance of such installations for moderate logistic traffic.

- Erect standard prefabricated fixed and floating bridges. (Supervisory personnel are provided by the Engineer Support Battalion, Force Service Support Group.)

- Construct engineer type timber bridges from local materials when available.

- Construct and operate rafts.

- Reinforce, repair, and maintain existing bridges.

- Construct and position obstacles requiring special engineer equipment or technical skills.

- Supervise the placement of extensive minefields and booby traps.

° Furnish technical and mechanical assistance for the construction of cut-and-cover type temporary fortifications.

° Perform specialized demolition missions beyond the capability of infantry elements.

° Provide specialized assistance in breaching obstacles, including mines, from the high water mark inland.

° Supervise extensive or sensitive minefield clearance.

° Supervise specialized camouflage operations, primarily concealment and deception measures, of major significance to the Division as a whole.

° Provide and operate water points, bath units and other hygienic services for the Marine Division (28:2-3; 29:17-18).

The structure of the Combat Engineer Battalion and the current manning levels of Combat Engineer Officers are included in Appendix L.

Engineer Support Battalion. The mission of the Engineer Support Battalion is "to accomplish general engineer support of a deliberate nature of the Marine Amphibious Force (MAF) [28:35; 29:20]." By the doctrine previously discussed, the tasks performed by the Engineer Support Battalion include the following:

° Develop routes of communication to include

°° construct, repair, and maintain roads and trails; improve and extend routes of communication initiated by division engineer forces.

°° erect prefabricated (fixed and floating) bridges and rafts.

oo replace prefabricated bridges with semipermanent bridging.

oo reinforce, repair, and maintain existing bridges.

° Install and operate bulk fuel systems in support of Marine Air Ground Task Force (MAGTF) operations.

° Construct temporary camps with minimum utilities and essential storage and maintenance structures.

° Install and remove minefields.

° Conduct engineer reconnaissance.

° Produce potable water.

° Improve and construct helicopter landing sites.

° Construct, repair, and maintain expeditionary airfields for Marine Aviation elements operating in the objective area in support of the landing force.

° Provide hygiene services as required.

° Provide technical assistance and equipment assistance in the development of combat service support areas or installations.

° Provide technical assistance in camouflage matters and construction of field fortifications.

° Coordinate functions with the civil engineer support construction plans (28:12; 29:37-38).

The Engineer Support Battalion provides general engineer support to the Marine Amphibious Force (MAF). It gives depth to the engineer effort by furnishing assistance to the Combat Engineer Battalion and the Wing Engineer Squadron, and assumes responsibility for engineer support to elements of the Force Service Support Group (FSSG). It may also

furnish assistance to naval construction units supporting the MAF. Engineer companies, with appropriate reinforcement from other elements of the Battalion, provide deliberate engineer support to Marine Air Ground Task Forces of less than MAF size (27:13; 28:39).

The structure of the Engineer Support Battalion and the current manning levels are included in Appendix M.

Wing Engineer Squadron. The primary mission of the Wing Engineer Squadron is

> to provide engineer (construction, utilities, material handling equipment, mobile electric power, tactical airfield fuel dispensing) support to the Marine Aircraft Wing (MAW) and to provide engineer organizational maintenance for elements of the MAW (27:29; 28:27).

Marine Corps employment doctrine, as specified in Fleet Marine Field Manual (FMFM) 4-4, Engineer Operations, states that the following specific tasks are performed by the Wing Engineer Squadron:

- Provide engineer reconnaissance and survey for the MAW.
- Repair, improve and maintain existing road networks within the MAW area of responsibility.
- Provide construction and maintenance of expedient roads.
- Construct, improve and maintain helicopter and light reconnaissance aircraft landing sites.
- Provide construction of temporary camps to include the provision of technical and equipment assistance for erection of shelters.
- Provide essential utilities support in the area of mobile electric power (MEP).

o Develop, improve and maintain drainage systems.

o Provide material handling service support as required (27:29-30; 28:29-30).

The structure of the Wing Engineer Squadron and current manning levels are included in Appendix N.

Non-Fleet Marine Force Assignments. Combat Engineer Officers may be assigned to a variety of duties that do not require occupational specialty training. These duties include the following:

a. Recruiting Officer - Commanding Officer, Executive Officer, or Operations Officer at an enlisted recruiting station.

b. Officer Selection Officer - an officer recruiter who visits the campuses of accredited colleges and universities to recruit candidates for the Platoon Leaders Class, Officer Candidate Course, and Woman Officer Candidate Course pre-commissioning programs.

c. Staff Officer.

d. Marine Barracks - Commanding Officer, Executive Officer, Company Commander, or Platoon Commander in the Marine Detachment at a naval installation.

e. Instructor at a military school or as a Navy Reserve Officer Training Corps (NROTC), Marine Option, professor.

f. Marine Corps Recruit Depots - duties involving training recruits or providing logistical and administrative support.

g. Inspector-Instructor - the active duty officer in command of a Marine Corps Reserve organization.

h. Facilities Officer - Facilities or Maintenance Officer at a Marine Corps base or station (35:1-7 - 1-10).

A Review of Previous Task Analyses

The U.S. Army and the U.S. Air Force have conducted task analyses within their respective services to determine the education and training requirements of officers in specific occupational specialties and in certain rank categories. The Marine Corps also has an on-going program that analyzes the requirements of occupational specialties. One of the most important studies conducted by the Marine Corps was the occupational analysis of junior officers. The three studies are described below and findings relevant to this study are summarized.

U.S. Army --- Review of the Education and Training of Officers (RETO). The Review of the Education and Training of Officers (RETO) by the U.S. Army consisted of sample data collection from every officer occupational specialty and position, a comprehensive survey of officer opinions and attitudes, an extensive study of other service and civilian systems, and a thorough review of existing literature. The result was a recommended system for the education and training of officers from pre-commissioning to retirement. The review was initiated due to the perception by the Department of the Army that the Army training system had not kept pace with the increased sophistication of equipment, tactics, and weapons systems (4:1; I-2). The Army did not have a "good grasp of predicting officer requirements . . . much less the ability to project and integrate future requirements [4:II-2]."

Of particular interest to this research, the Army developed a system of Military Qualification Standards (MQS). The multi-volume set of MQS books specifies the knowledge and skills an officer must acquire

at several points during a career in order to perform duties effectively. MQS I lists the skills, knowledge and education which every Army officer must obtain to start and complete a career. Tasks common to all occupational specialties are included. MQS II specifies the tasks that must be mastered by lieutenants in a given occupational specialty (7:xi; 17:37).

The review focused on the factors in the education and training process that might require changes, especially because of the introduction of sophisticated new weapons systems and the dynamics of world politics.

> Wherever the truth lies in strategic nuclear balance, there is no question our conventional forces should expect to be outnumbered in people and modern weapons. The difference between victory and defeat will likely lie in the difference between the quality of our people and those of the enemy (4:v).

A detailed study of the 1973 Mid-East war was conducted to assess the competence in the operation and employment of U.S. weapons. However, funds were not available at that time to expand the study beyond Israeli forces to U.S. forces. During the spring of 1977, ". . . it was generally agreed . . . that we were not producing officers with the desired level of military competency [4:v]." The Army recognized the requirement to forecast personnel education and training needs at least as well as equipment requirements were forecasted. Primary emphasis was placed on the need to accurately forecast and rationally implement the integration of concepts, people, and equipment (4:I-1).

The Officer Training and Education Research Group (OTERG) used "the profession" to describe the education and training requirements of

Army officers. Figure 2.6 includes the terms in which the requirements were discussed.

IN TERMS OF →

- The Profession
- Environment of the 80s and 90s
- Education and Training Learning Objectives
- Levels of the Officer Corps
- Continuing Professional Military Education
- Duty Positions Throughout the Army

Figure 2.6. Areas Used to Describe the Education and Training Requirements of Army Officers (Adapted from 4:II-2)

The "profession" was also viewed in terms of the responsibilities of a military officer.

> Military officers are unique in that they shoulder three responsibilities simultaneously: while they pursue a career of successive assignments and promotion, they maintain a national institution called the Army of the United States, and they sustain the expertise, structure and values of a profession. Most men and women in other walks of life are absolved of one, if not two, of these responsibilities [4:III-1].

One of the basic premises of the RETO was that officers are needed "who can think and decide about the myriad of [sic] issues brought before them each day [4:III-3]." This means that today's officers must rationalize the contradictions that confront them from the day they are commissioned. Figure 2.7 includes a partial listing of military and non-military values that confront the young officer.

Non-Military Thesis	Military Antithesis
Questioning authority	Obedience to authority
Freedom	Order
Diversity, independence, questioning of given values	Uniformity, conformity, acceptance of given values
Identify, achieve individual potential	Subordination, submergence of individual identity for goal of whole
Doubts, skepticism	Confidence, certainty
Humility	Pride
Variety, complexity	Simplicity, unity
Sound mind	Sound body
Attitudes, the search for inward conviction	Manners, bearing, stressing outward appearances
Cultivation of imagination	Habitual practice of initiative
Experience - vicarious	Experience - actual
Judgment	Loyalty
Responsibility as accountability to principles inwardly derived	Responsibility as obligation to authority externally imposed

Figure 2.7. Values that Confront the Young Officer (Adapted from 4:III-14)

Learning objectives must be established before an effective education and training program can be created. The learning objective definitions adopted by the RETO study were adapted from Kutz (16) and are identified in Figure 2.8.

<u>KNOWLEDGE</u>. Information, data, facts, theories, concepts. The factual basis of any course of learning. Answers question: "What should I know?" May be achieved by many learning methods. Highly perishable.

<u>SKILLS</u>. An ability which can be developed; not necessarily inborn; manifested in performance, not merely in potential. Developed by learning to manipulate factual knowledge. Answers question: "What should I be able to do?" Categories:

- Information-retrieval skills -- reading, research, hearing.
- Communication skills -- writing, speaking, languages.
- Technical skills -- performance within a specific activity, (map-reading, marksmanship).
- Human skills -- the ability to work effectively as a group member and to build cooperative effort within a team (leadership skill, counselling).
- Analytical and conceptual skills -- problem-identification, problem-solving, decision making, planning, making estimates of the situation, synthesizing, inducing, structuring, systems analyzing.

<u>INSIGHTS</u>. Ideas and thoughts derived internally from an ability to see and understand clearly the nature of things. Necessary part of making judgments, of deciding, of "putting it all together," "of being aware," of wisdom, of far-sightedness. Answers questions: "What does this mean?," "What is important in this situation?" Cannot be taught directly, but can be induced by well-educated faculty, using appropriate teaching methods. Generally, a product of education rather than training.

<u>VALUES</u>. Convictions, fundamental beliefs, standards governing the behavior of people. Includes attitudes towards professional standards such as duty, integrity, loyalty, patriotism, public service. "Take care of your men," "accomplish the mission." Answers questions: "What do I believe?," "Where do I draw the line?"

Figure 2.8. Learning Objectives and Definitions Established for The Review of the Education and Training of Officers (Adapted from 4:III-9)

The RETO study group identified the following learning requirements of the company grade officer:

- Lead and supervise
  - Technical skills in entry specialty
  - Basic knowledge of all specialties
- Human skills
- Communication skills
- Professional knowledge
- Need for more learning time and resources (4:III-2).

Figure 2.9 depicts the varying skills which are required in jobs encountered as a military officer progresses through increasing ranks.

The RETO study group determined that

> there is a requirement for the Army not only to delineate to the officer what one is expected to know and be able to do, but also to delineate the most satisfactory method for learning and to provide the time and resources for the officer to accomplish this learning [4:III-16].

To meet this requirement the Army established the Military Qualification Standards (MQS) concept of occupational specialty education and training. Undergraduate education was established as the start of the MQS program. The baccalaureate degree was recognized as "setting the proper qualification standard for pre-commissioning education [4: III-22]," including general education in liberal arts or science, which is considered sufficient for most officers. Regardless of the subject area, the learning method "should include extensive work in the common skills, research and information skills, and in introductory work in analytical, computing and conceptualizing skills [4:III-22]."

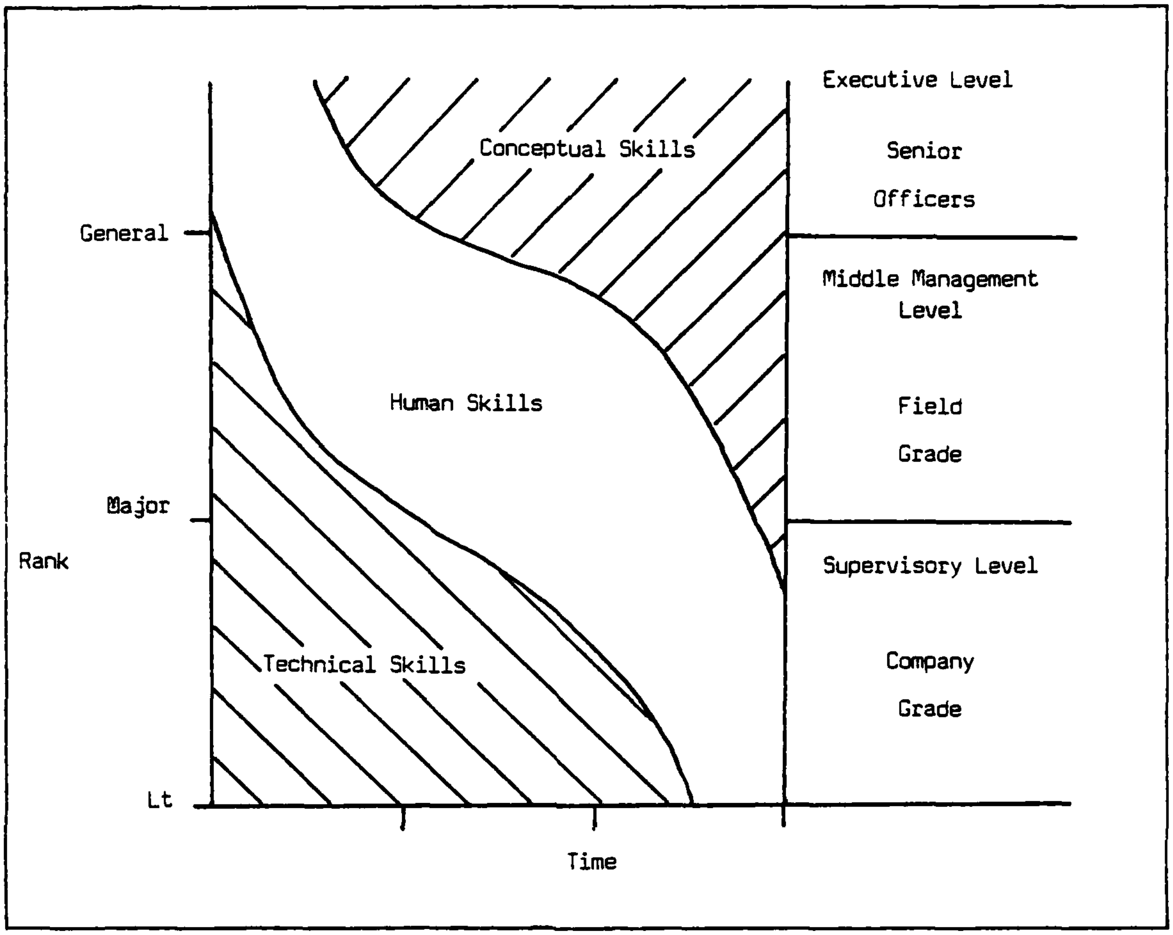


Figure 2.9. Required Officer Skills as a Function of Rank and Time in Service (Adapted from 4:III-10)

The features of the Military Qualification Standards (MQS) concept include the following:

a. A definition of specialty qualification.

b. Strong emphasis on individual achievement.

c. Linking resident schooling and on-the-job experience.

d. Relating skills and knowledge to the Army Training Evaluation Program (ARTEP) and Soldiers Manuals.

e. Administration, supervision, and validation of task accomplishment, and certification of qualifications, all by commanders.

f. Establish clear written standards, perhaps in booklet form, together with criteria for validation. This provides a means for an officer to gauge his/her learning (4:V-6).

Military Qualification Standards could be and were prepared immediately after the RETO for most occupational specialties. However, Specialty Code (SC) 21, Engineer, required a job/task analysis to determine if requirements were accurately stated and to determine the precise education and training requirements for engineer officers (6:X, VII-2). The draft list of MQS II (Lieutenants) for Specialty Code 21, Engineer, is included in Appendix O. These engineer tasks were the basis for the task inventory used to determine what tasks company grade Marine Corps Combat Engineer Officers actually perform.

The task force that conducted the Review of the Education and Training of Officers reviewed the processes of the other U.S. armed forces and those of four allied and two Communist nations. The inherent danger of making direct comparisons of education and training programs was apparent. Different missions, methods of employment, and resources lead to different programs, but most were found to have a common approach to meeting their requirements (6:G-1).

A random sample of 14,536 active duty Army commissioned officers was also selected for the survey, but only 7,787 questionnaires were returned for a response rate of 54 percent. The results may not have been representative for task analysis for the following reasons:

a. Lieutenants comprised 26.6 percent of the Army but only 18.7 percent of the response.

b. Lieutenant Colonels and Colonels comprised 19.1 percent of the Army, but were 24.7 percent of the respondents (5:I-2-48).

The level of qualification of individual officers depends on skill, education, and experience. One of the findings of the review was that

> all of the other services currently send officers to an intermediate level school, usually in the grade of captain (0-3), and, except for the Marine Corps, the vast majority of the eligible officers attend . . . . Though a Marine Corps study . . . a few years ago recommended increasing the percentages of officers attending the Amphibious Warfare School (or other "advanced course" level classes) the trend has been just the opposite. Currently only about 30 percent attend this level of schooling. Approximately another 10 percent will enroll in such schooling by correspondence [6:G-2].

However, the responses to the question

> **Which one of the following is the most useful training or education you have already received in support of your primary specialty?**

indicated that all grades except 0-1 perceived on-the-job training as the most beneficial (5:L-2-17).

The requirement for proficiency in MQS skills is independent of duty positions. All Army officers at a specific level (rank) of MQS must be proficient in their tasks and skills, regardless of assignment (7:ix).

U.S. Air Force Curriculum Validation Study. The Air Force Officer Professional Military Education (PME) Curriculum Validation Project revealed the manner in which officers' leadership, management, and communicative task involvement increases with paygrade. The 325 task

statements used in the three different survey booklets were broad enough to be referred to as behaviors, responsibilities, or duties, but all were considered tasks for ease in computer analysis (3:1).

Data was collected from a random sample of officers in paygrades 0-1 through 0-6 in all occupational specialties. The data included paygrade specific and occupational field specific information, task difficulty ratings by senior officers (0-6), and perceptions of PME curriculum topics. The analysis was used to validate and revise the curricula of all pre-commissioning and post-commissioning PME courses (e:iii-iv, 1).

Among the analyses were respondent perceptions of the need for PME curriculum topics on the job and as a professional officer. Five major curriculum areas consisting of 247 topics were rated on the following scale:

1 - Not at all
2 - To very little extent
3 - To a little extent
4 - To a moderate extent
5 - To a fairly large extent
6 - To a great extent
7 - To a very great extent.

Table 2.10 shows the average mean need ratings of the major topic areas based on the need for each topic on the job. The ratings consistently increased with paygrade. This trend was similar to the pattern of increasing task involvement with increasing rank (3:29-30).

The average ratings based on "need for an effective professional career" were almost always higher than the ratings for "need on the

TABLE 2.10

Comparison of Average Mean Need Ratings of Topics Among Major PME Curriculum Areas (Based on Need for Each Topic on the Job) (Source 3:31)

Major Curriculum Topic Area	Average Mean Rating 0-1	0-2	0-3	0-4	0-5	0-6
Communication Skills	3.8	3.7	3.9	4.6	4.7	5.3
General Command and Management	3.7	3.7	3.8	4.1	4.2	4.8
The Military Profession, Environment, and Management	3.3	3.1	3.1	3.2	3.5	4.3
Military Environment/ National Security	2.2	2.2	2.3	2.5	2.6	3.0
Military Employment	2.2	2.2	2.3	2.7	2.6	3.0
Average Mean Ratings All Topics	2.9	2.8	2.9	3.2	3.3	3.8

job." The least experienced respondents rated the need for some topics greater than did the more experienced 0-4, 0-5, and 0-6 respondents. This indicated that their perceptions were perhaps based on intuition instead of actual perceived need (3:30). Table 2.11 includes the mean need ratings based on the need for each topic as a professional officer.

Tasks were analyzed according to the percentage of respondents in each paygrade who performed that task. Four decision criteria were used:

- Air Training Command Regulation 55-22, <u>Occupational Survey Program</u>, set the minimum criteria to be applied in the design or revision of basic resident training courses at 30 percent of a group performing any given task.

TABLE 2.11

Comparison of Average Mean Need Ratings of Topics Among Major PME Curriculum Areas (Based on Need for Each Topic as a Professional Officer) (Source 3:31)

Major Curriculum Topic Area	Average Mean Rating 0-1	0-2	0-3	0-4	0-5	0-6
Communicative Skills	5.3	5.0	5.0	5.3	5.3	5.8
General Command and Management	5.0	4.7	4.8	4.8	4.9	5.0
The Military Profession, Environment, and Management	4.5	4.3	4.4	4.4	4.3	4.7
Military Environment/ National Security	4.0	3.7	3.7	3.9	3.8	4.0
Military Employment	4.1	3.8	4.0	4.2	4.5	3.6
Average Mean Rating All Topics	4.5	4.2	4.3	4.4	4.4	4.7

° Performance of a task by at least 50 percent of a group indicated that some formal training <u>might</u> be necessary.

° Performance of a task by 30-50 percent of a group indicated some type of background or fundamental training might be considered.

° Task difficulty, as perceived by 0-6 respondents, <u>might</u> indicate at what level training should occur (3:5-7).

General inferences about the officer PME program were drawn from the analyses of task performance data, PME curriculum topic ratings, and perceptions of benefit ratings.

° A continuing, multi-phase, professional development program is needed to support the pattern of increasing involvement with leadership,

management, and communicative tasks. At each paygrade officers are likely to encounter new responsibilities that require specific skills and knowledge not previously required by their jobs.

o Officers within the same paygrade have different types of involvement with leadership, management, and communicative tasks. More individualized instruction could be recommended by PME planners if they are aware of the varying degrees of experience and needs of the different occupational specialties.

o Officers perceive a greater need for increased education and training in communication, command, and management than for other topic areas.

Officers feel that resident PME programs are highly beneficial (3:30, 36-37). Table 2.12 shows the basis for this inference.

Marine Corps Occupational Analysis Program. Marine Corps Order 1200.13C, Marine Corps Occupational Analysis Program (MCOAP), specifies that the purpose of the program is to

o determine what jobs are actually being performed in the Marine Corps; and to

o compare those jobs to previously published Military Occupational Specialty (MOS) descriptions, occupational field structures, and training lines (32:1).

Occupational analysis, task analysis, and individual front-end analysis (IFEA), which are methods of improving individual education and training, include the identification, collation, and analysis of job data.

Job data represent responses from Marine job incumbents to a comprehensive set of questions aimed at determining

a. What the Marine really does?
b. At what skill level the Marine performs?
c. How many Marines perform a given task?
d. How much relative time Marines spend performing a given task (32:1).

TABLE 2.12

Paygrade Comparison of the Percentages of Those Completing a PME Course Who Indicated the Course Benefited them To a Fairly Large Extent, A Large Extent, or a Very Large Extent (Source 3:35)

PME Courses	Percent Responding 0-1	0-2	0-3	0-4	0-5	0-6
Resident Courses						
Air Force Academy Military Training	64	62	60	62	82	75
Office Candidate School (OCS)	--	--	--	--	77	81
Officer Training School (OTS)	53	47	40	51	47	--
Reserve Officer Training Corps (ROTC)	54	44	37	39	46	48
Squadron Officers School (SOS)	--	--	35	39	44	57
Air Command and Staff College (ACSC)	--	--	--	66	63	65
Other Intermediate Service Schools	--	--	--	69	52	77
Air War College (AWC)	--	--	--	--	75	67
Industrial College of the Armed Forces (ICAF)	--	--	--	--	--	73
Other Senior Service Schools	--	--	--	--	--	77
Correspondence Courses						
SOS	--	15	8	7	7	11
ACSC	--	--	21	13	7	22
AWC	--	--	--	39	39	38
ICAF	--	--	--	25	19	34
Seminar Courses						
ACSC	--	--	29	31	44	36
AWC	--	--	--	--	43	53

The unit of study in the Marine Corps Occupational Analysis Program is normally a complete enlisted field. However, other functional groupings, both officer and enlisted, are analyzed on an as-desired or as-requested basis (33:2).

The methodology of the analysis consists of four steps. First, the survey questions are constructed using technical publications, programs of instruction, previous survey instruments, and selected subject matter experts. Second, occupational data is collected by means of a comprehensive survey questionnaire. Third, the data is organized into job-related categories by computer software called the Comprehensive Occupational Data Analysis Programs (CODAP). Finally, the data is analyzed and jobs are identified and validated, and job descriptions are ordered. The purpose of the analysis is to determine what jobs actually exist, the content of each of those jobs, and the relationships among the various jobs (33:2,4; 40:4-2).

The analysis of the data consists of two parts: occupational analysis and training analysis. Occupational analysis includes the following:

a. Determine Military Occupational Specialty (MOS) validity - tasks performed must be unique to the MOS and must be performed by an identifiable group.

b. Review of the MOS career ladder - determine if proper training advancement occurs and if the job is at the appropriate grade level.

c. Review MOS Manual description.

d. Review assignment policies

e. Review training adequacy (broad review) (40:4-12, 4-13).

The purpose of the training analysis is to determine what tasks should be trained and where those tasks will be trained. All tasks identified by the occupational analysis cannot be trained due to resource constraints (40:H-1). Therefore, the training analysis must identify the optimal instructional setting, which is that training method that "provides the most effective and efficient training to those who require the training, at the point in time when the training is most needed [40: H-1]." Table 2.13 includes the possible instructional settings, with the two settings applicable to Marine Corps Combat Engineer Officers defined in detail.

Soft skill analysis involves the analysis of those skills which are difficult to quantify or measure. The primary characteristic of a soft skill is that it is intangible. Analysis includes the identification of the

knowledge
problem solving techniques
competencies
internal thought processes

of outstanding performers and the transformation of these intangibles into tangible training standards that can be observed and measured (40: 5-2).

Although difficult to quantify, the following are examples of soft skills:

TABLE 2.13

Possible Optimal Instructional Settings for Marine Corps Combat Engineer Officers as a Result of Training Analysis (Source 40:H-2, H-3).

Instructional Setting	Characteristics
Job Performance Aid (JPA)	
Self Teaching Exportable Package (STEP)	o close supervision not required. o task can be self-taught by individual or group o material required for training is is available at unit or in the local area. o no requirement exists to perform task immediately after assignment.
Managed On-the-Job Training (MOJT)	
Installation Support Schools (ISS)	
Formal Schools (FS)	o large group must be taught the same thing at the same time and location. o task difficulty requires resident instruction o material required for training cannot economically be placed in the field

a. Wording may make a skill soft because the task statement asks for thought instead of action.

b. Vagueness or complexity can make a skill soft when the scope is unbounded.

c. A skill can be soft when it is a goal but the performance measures are only indicators of the desired goal.

d. Soft skills are often those in which decisions must be made which are dependent on experience, competency, attitudes, and the situation (40:5-2, 5-3).

The Marine Corps Junior Officer Occupational Analysis, which was conducted during 1981, is an example of how the Marine Corps Occupational Analysis Program can be applied to a group of officers who have little in common other than being Marine Corps officers. The analysis was undertaken to

- Determine the core tasks common to a large group of Marine lieutenants.
- Compare the tasks performed by the lieutenants to the program of instruction at The Basic School (TBS).
- Provide input data to validate and/or update the curriculum at The Basic School (36:2).

The analysis report provided

> an objective methodology to curriculum review and design which could save training dollars by eliminating unnecessary portions of the curriculum and incorporating/ strengthening essential subjects which are required by lieutenants in the field (36:2).

The initial task inventory was compiled by reviewing the program of instruction at The Basic School and officer studies conducted by other services. Random interviews with various officers and with subject matter experts at The Basic School were conducted to insure that the task list was accurate and complete (36:2).

The demographic, or background, responses of the randomly selected lieutenants revealed the significant trends contained in Figure 2.10.

53.2 percent indicated a need for more emphasis in general and personnel administration at The Basic School.

43.9 percent indicated a need for more emphasis in military law and legal matters at The Basic School.

37.1 percent indicated a need for more emphasis in management skills at The Basic School.

67.4 percent did not plan to remain on active duty or were uncertain.

55.8 percent desired to change occupational fields.

47.8 percent indicated that they were trained for their present billet through on-the-job training.

89.3 percent were assigned one of their first three choices of primary occupational specialties.

44.3 percent spent over one-fourth of their time on non-MOS tasks.

Figure 2.10. Significant Trends Revealed in the Marine Corps Junior Officer Occupational Analysis (Source 36:3)

Those officers surveyed indicated the relative percentage of time they spent performing certain tasks in relation to the total time spent performing their duties. They indicated by their responses courses at The Basic School that were perceived to have been "undertaught" or "overtaught." Tactics, infantry weapons, and marksmanship were perceived as being overtaught in relation to the relative percentage of time spent performing those tasks in current jobs. Of course, these are essential combat-related core tasks which each Marine Corps officer must possess in combat. The time spent performing a given task could not be directly

correlated to the course time spent. However, large variances in relative time actually spent on the job for a given task, and the amount of time dedicated to the education and training in that task can be used to indicate that too much or too little instruction is being offered (36:3). Table 2.14 shows the course areas in the 1980 TBS program of instruction and the corresponding relative time spent by the surveyed officers. Table 2.15 includes the relative time spent in the various duty areas. Appendix P contains the report of the relative time spent on the various tasks included in the survey questionnaire.

No official Headquarters, U.S. Marine Corps (HQMC) position was taken concerning the report due to the study guidance provided by the Commanding General, Marine Corps Development and Education Command (MCDEC). The report was not staffed through HQMC and was submitted directly to the Commanding Officer of The Basic School for appropriate action (36:2). Appendix Q contains a summary of the changes in The Basic School program of instruction as a result of the analysis and the ISD requirements for continuous course review.

Summary

This chapter has presented the pre-commissioning and post-commissioning components of the education and training program of the Marine Corps Combat Engineer Officer. Initial skill training is provided at two levels. The Basic School provides the common background in general military and professional skills. The Marine Corps Engineer School, through the Combat Engineer Officer Course, provides an introduction to some of the myriad tasks that confront the company grade officer

TABLE 2.14

Comparison of Relative Time Spent Performing Duties by Lieutenants and Course Areas Taught at The Basic School (TBS) (Adapted from 36:4)

Duties	% of Time Spent by Respondents	Corresponding Course Area	% of Total Course Time
General Administration	16.92	Personnel/General Administration	3.00
Training/Training Management	12.02	N/A	0.00
Supply/Logistics	11.71	Logistics	1.30
Leadership	9.84	Leadership	8.68
Personnel Management	9.02	Management	1.20
Air Support Operations	7.38	Aviation	1.20
Legal	6.87	Military Law	2.30
Land Navigation	5.08	Map Reading and Land Navigation	5.00
Tactics	4.57	Tactics/Infantry Weapons	32.60
Marksmanship	3.62	Marksmanship	10.50
Intelligence/Security	3.48	Combat Intelligence	0.80
Drill/Ceremonies/Inspections	2.94	Drill/Command/Ceremonies	4.00
Nuclear, Biological, Chemical Defense	1.84	Nuclear, Biological, Chemical Defense	0.60
Engineering/Mine Warfare	1.11	Field Engineering	1.70
Communications	1.06	Communications	1.60
Developing Operation Plans and Orders	1.02	Organization and Staff Functioning	1.20
Supporting Arms	0.77	Supporting Arms	1.20
N/A	N/A	Physical Training/ Riot Control	17.14
First Aid	0.48	First Aid	0.70
N/A	N/A	History and Tradition	5.28

Table 2.15

Relative Time Spent in Officer Duty Areas (Source 36:C-1)

Duty Title	Percent of Members Performing %	Average Percent Time Spent By Members Performing %	Average Percent Time Spent By All Members %	Cumulative Sum of Average Percent Time Spent By All Members %
General Administration	97.05	17.44	16.93	16.93
Training/Training Management	95.35	12.60	12.02	28.94
Supply/Logistics	76.90	15.23	11.71	40.66
Leadership	90.54	10.87	9.84	50.50
Personnel Management	88.06	10.24	9.02	59.52
Air Support Operations	46.82	15.75	7.38	66.90
Legal	81.70	8.41	6.87	73.77
Land Navigation	55.35	9.18	5.08	78.85
Tactics	51.94	8.79	4.57	83.42
Marksmanship	78.45	4.62	3.62	87.04
Intelligence/Security	43.41	8.03	3.48	90.52
Drill/Ceremonies/Inspections	75.35	3.91	2.94	93.46
Nuclear, Biological, Chemical Warfare	42.63	4.32	1.84	95.30
Engineering/Mine Warfare	34.57	3.22	1.11	96.42
Communications	37.98	2.78	1.06	97.47
Developing Operation Plans/Orders	42.79	2.40	1.02	98.50
Supporting Arms	37.83	2.05	0.77	99.27
First Aid	31.47	1.55	0.48	99.75

in the many types of Fleet Marine Force (FMF) duty assignments. Career-level schools provide professional development training to less than 30 percent of eligible officers.

Previous task analyses conducted by the Army, Air Force, and Marine Corps have identified the importance of knowing what officers actually do in their jobs and their perceptions of how the training process meets their needs. Specific results of the analyses include the

o development of Military Qualification Standards (MQS) which are the basis for U.S. Army education and training programs of instruction and the standards against which performance is measured.

o identification of the requirement for progressive multi-level officer professional military education courses through different ranks as officers acquire new and expanded responsibilities.

o identification of specific courses in programs of instruction that may require increased or decreased emphasis, based on officer perceptions of their needs on the job.

III. Methodology

This chapter describes the methodology that was used to accomplish the research objectives and to answer the research questions listed in Chapter I of this study. The population from which the data was collected, the survey instruments which were used to collect data, the data collection plan, and the statistical tests which were used to analyze the data are described.

Population

The population of interest in this research consisted of all Marine Corps officers, grades 0-1 through 0-6, who possessed a primary or secondary Military Occupational Specialty (MOS) of 1302, Engineer Officer. Officers with secondary occupational specialties of 1302 were included for two reasons: the 0-6 group could be identified, since 0-5 is the last grade in which the 1302 specialty is primary; and those officers who possess 1302 as a secondary have been exposed to the education and training process and have served as Combat Engineer Officers. Due to the relatively small size of the population, 540, a census survey was conducted.

Survey Instruments

Two survey questionnaires were used in this research to collect data from which to answer the research questions. The questionnaires were created specifically for this research, but the design included the basic format and techniques of surveys sponsored by the Marine Corps.

The Deputy Chief of Staff for Training, Headquarters, U.S. Marine Corps, approved the conduct of the survey. The survey questionnaires were approved by the Commandant of the Marine Corps (Codes TAP and LME) and the Commanding Officer, Marine Corps Engineer School.

The questionnaires were administered in a mail survey. The decision to use a mail survey was made due to the requirements to gather data and to use practicality. Although the survey that is administered personally provides greater quality control and response (21:4-8), the mail survey was more practical and suitable for this research. The population was reached, the cost was relatively low, there was no interviewer bias, and respondents had adequate time to think about their responses (10:213-215; 13:118).

Military address labels were provided by the Commandant of the Marine Corps (Code MPI) for all personnel in the population. The questionnaires and cover letters were mailed in Marine Corps envelopes to elicit a better return rate. The return address labels were provided by the Air Force to increase the convenience and economy of the data-gathering process. A total of 540 survey questionnaires were mailed, which included 193 field grade and 347 company grade Marine Corps officers.

Both survey packages included a cover letter signed by the researcher, a privacy act statement, a brief summary of training terminology, the objectives of this research, and a three-part questionnaire.

Part I of the questionnaires measured the following attributes:

- grade
- years of commissioned service
- source of commissioning
- primary, secondary, and tertiary Military Occupational Specialties (MOS)
- current assignment
- current billet MOS
- level of education
- major area of study
- assignments to engineer-type commands.

Opinions were also gathered concerning sources of education and training for Combat Engineer Officer duty assignments, current assignments, and facilities management assignments.

Part II of the questionnaires measured the perceptions of respondents concerning the relative importance and perceived adequacy of the education and training received at The Basic School and the Combat Engineer Officer Course. Perceptions of relative importance were based on the following five-point Likert scale:

(1) Not necessary
(2) Somewhat necessary
(3) Usually helpful
(4) Somewhat important
(5) Critically important.

The course areas listed for The Basic School were from the program of instruction of the Basic Officer Course (38) and were broad duty areas. The associated tasks were not considered essential to this research. The task inventory for the Combat Engineer Officer Course was taken from the current program of instruction (39) and are the tasks for which skills are trained. Each respondent was also asked to list areas in each course of instruction that require more or less emphasis, based on actual

skill requirements. Perceived education and training adequacy was measured by yes, no, or undecided responses.

Company grade officers answered the following questions:

Based on your personal experience, what is your perception of the relative importance of this course area to your past and current assignments?

Do you feel that you received adequate training/education in this course area?

Field grade officers answered the following questions:

Based on your perceptions as a commander/supervisor of company grade Combat Engineer Officers, what is the relative importance of this course area to their duty assignments?

Do you feel that company grade Combat Engineer Officers you have observed received adequate training in this course area?

Part III consisted of a list of 117 Combat Engineer Officer tasks adapted from Military Qualification Skills II, Specialty Code 21, Appendix O. Forty-four tasks were not included because they related to tasks that are unique to Army engineers. Company grade officers were asked to record their relative time spent on each task compared to the time currently or previously spent on all engineer-related tasks. The following four-point Likert scale was used:

(0) Zero time spent
(1) Minimal
(2) Moderate
(3) Considerable.

They also answered yes, no, or undecided to the following question:

Do you feel that you have been adequately trained to perform this task?

The company grade officer survey package is included in Appendix R.

Field grade officers were asked to evaluate the relative importance of each task, regardless of Combat Engineer Officer billet or organization. The following five-point Likert scale was used:

(1) Not necessary
(2) Somewhat important
(3) Usually helpful
(4) Somewhat important
(5) Critically important.

They also responded yes, no, or undecided to the following question:

> **Do you feel that current institutional training programs adequately prepare Combat Engineer Officers to perform this task?**

The field grade officer survey package is included in Appendix S.

Data Collection Plan

Six weeks were allowed for the return of the survey questionnaires. This period was chosen to give respondents stationed overseas and aboard ships ample time to respond. The data was coded, transferred to optical scan (OCR) sheets, and read to a file. Five sheets were required for each case, with five identification variables and 325 data variables per case. The data consisted of nominal and interval level data. The four- and five-point Likert scale responses were assumed to be interval level data. Appendix T contains the variables that were coded to facilitate statistical analysis.

Data Analysis

The computer program Statistical Package for the Social Sciences (SPSS) (18) was used to analyze the data obtained from the survey questionnaires. Since a return rate of less than 100 percent was anticipated, it was assumed that the Central Limit Theorem applied to this research. The

Central Limit Theorem states that for large sample sizes, 30 or more cases, the data are assumed to be normally distributed. The specific SPSS subprograms used in the analysis of data and the applicable decision rules are described below.

FREQUENCIES. The frequency of response to each question was examined by using subprogram FREQUENCIES. Additionally, the responses of company grade and field grade officers were evaluated separately to test hypotheses. The subprogram produced numbers, percentages, and histograms for each variable. Condescriptive statistics, including the mean, standard error, standard deviation, and variance, were also produced for interval level data.

CROSSTABS. The cross-classification of variable components and the presentation of the results in a two-way contingency table are early stages in the examination of possible relationships between two variables (10:389). Subprogram CROSSTABS created a contingency table with associated chi-square statistics and probability for each relationship. Nominal or higher level data could be used as either variable.

Chi-square is a test of statistical significance that helps determine if a systematic relationship exists between two variables. The following hypothesis was tested:

H_o: Variables are independent.

H_a: Variables are not independent.

Throughout this study a significance level of 0.05 was used. The significance level is the probability that the researcher will reject the null

hypothesis when it is true. If the probability associated with a given chi-square value was less than the level of significance, 0.05, the null hypothesis was rejected. Rejection of the null hypothesis indicated the likelihood that the variables were dependent. Failure to reject the null hypothesis indicated that the variables were probably independent (14: 625; 20:223-4). The chi-square statistic only helped the researcher decide whether variables were independent or related. Strength and direction of the relationship were not indicated.

ONEWAY. Subprogram ONEWAY is an Analysis of Variance (ANOVA) statistical procedure that determines variable relationships involving one independent variable. The independent variable may be nominal or higher level data. The dependent variable must be interval or ratio level data. The following hypothesis was tested:

H_o: There is no difference in opinion among the different groups of the independent variable (sample means are equal).

H_a: There is a statistically significant difference of opinion among the groups of the independent variable (at least one sample mean is not equal).

The subprogram computed an F ratio statistic and its associated probability for each set of variables. A large F-ratio indicated that the independent variable accounted for a large part of the total variance in the data. If the associated F probability was less than the level of significance, 0.05, the null hypothesis was rejected. Rejection of the null hypothesis indicated that a statistically significant difference existed among the perceptions of the categories of the independent

variable. Additionally, subprogram ONEWAY provided a listing by category, allowing analysis of which category was significantly different (10:430-431; 14:242, 360; 18:427-438; 20:422-425).

TUKEY. The TUKEY multiple range test allowed further analysis of individual group means if the null hypothesis was rejected. All possible pairs of group means were compared, and groups were divided into homogenous subsets. The difference in the means of any two groups within a subset was not statistically significant at a significance level of 0.05 (18:430-431; 20:426-428).

REGRESSION. The independent variables that could be used to predict individual perceptions were determined by the REGRESSION subprogram. Stepwise multiple regression was used to develop a linear model for each dependent variable. Scattergrams and residual plots were used to analyze each model with respect to the assumptions of linear regression. Stopping criteria for the introduction of independent variables into various models are explained for each multiple regression in the analysis contained in Chapter IV.

Table 3.1 includes a summary of the data analysis techniques used to answer each research question.

TABLE 3.1

Data Analyses Used to Answer Research Questions

Research Question	Variables	SPSS Subprogram
1	Tasks in Section III (Company Grade questionnaire)	FREQUENCIES
2	Tasks in Section III (Field Grade questionnaire)	FREQUENCIES
3	Section II, TBS Course Areas (Company Grade questionnaire)	FREQUENCIES
4	Section II, TBS Course Areas (Field Grade questionnaire)	FREQUENCIES
5	Section II, MCES Tasks (Company Grade questionnaire)	FREQUENCIES
6	Section II, MCES Tasks (Field Grade questionnaire)	FREQUENCIES
7	Question 15 (Company Grade), Question 13 (Field Grade) with Tasks of Section III	ONEWAY
8	Questions 13 and 14 (Company Grade), Questions 11 and 12 (Field Grade) with Tasks of Section III	ONEWAY
9	Question 12 (Company Grade), Question 10 (Field Grade)	FREQUENCIES
10	Section II responses (both)	(Manual)
11	Section II responses (both)	(Manual)
12	Question 5 with Section II (both)	ONEWAY
13	Question 3 with Section II (both)	ONEWAY
14	Questions 1, 2, 3, 5, 11, 12, and 13 with Section II (both)	REGRESSION

IV. Results

This chapter presents the descriptive statistics for the data collected by the survey questionnaires. Responses to Part I of the survey questionnaires are reported together. Part II of the questionnaires, which deals with the relative importance of the duties and tasks instructed at The Basic School and the Marine Corps Engineer School, is reported separately for company grade and field grade respondents. The responses to Part III of the questionnaires, Combat Engineer Officer tasks, are briefly discussed and are presented in tabular form in appendices.

Presentation of Findings

The return percentages for the questionnaires are shown below:

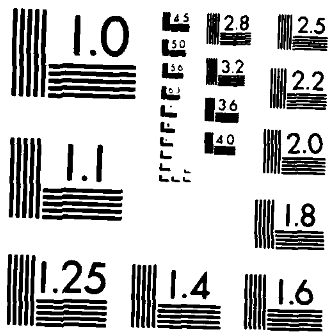
Questionnaire	Number Mailed	Number Returned	Return Percentage
Company Grade	347	232	68.59
Field Grade	193	133	65.80
Total	540	365	67.59

Part I.

Grade. Table 4.1 shows the grade distribution of survey respondents. The category 0-4 (Selectee) was added to the company grade questionnaire to compensate for the three month delay between the receipt of the military address labels and the mailing of the questionnaires. Six of the 13 captains in the 0-4 (Selectee) category had already been promoted to major. Their responses were transcribed to field grade questionnaires.

AD-A147 260 AN EVALUATION OF THE EDUCATION AND TRAINING OF MARINE CORPS COMBAT ENGINEER OFFICERS(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH H MASHBURN SEP 84 2/5

UNCLASSIFIED AFIT/GEM/LSM/84S-13 F/G 5/9 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 4.1

Distribution by Grade of Survey Respondents

Grade	Number Mailed	Number Returned	Percent Returned	Returned Undelivered
0-1	42	32	76.19	1
0-2	88	58	65.91	1
0-3	217	135	68.20	2
0-4 (S)	--	13		-
0-4	116	72	62.01	9
0-5	51	32	62.75	4
0-6	26	23	88.46	-
Total	540	365	67.59	17

Years of Commissioned Service. Table 4.2 includes the years of commissioned service of the survey respondents. The categories were chosen to provide natural breaks between and within grades. The company grade category "More than 10 Years" was included to allow for major selectees and those officers who have not been promoted with their peers.

Source of Commissioning. The distribution of the commissioning sources of the survey respondents is shown in Table 4.3. The 18 respondents in the "Other" category include those officers commissioned through the Enlisted Commissioning Program (ECP), the Warrant Officer (WO) Program, inter-service transfer, and the Navy Enlisted Scientific Education Program (NESEP).

TABLE 4.2

Years of Commissioned Service Distribution of Survey Respondents

Questionnaire	Years of Commissioned Service	N	%
Company Grade	Less than 2	31	8.5
	2 to 4	57	15.6
	5 to 7	80	21.9
	8 to 10	55	15.1
	More than 10	11	3.0
Field Grade	10 to 12	23	6.3
	13 to 16	54	14.8
	17 to 20	21	5.8
	More than 20	33	9.0
Total		365	100.0

TABLE 4.3

Distribution of Commissioning Sources of Survey Respondents

Source	Company Grade		Field Grade		Total	
	N	%	N	%	N	%
OCS	64	27.6	55	41.4	119	32.6
PLC	93	40.1	42	31.6	135	37.0
NROTC	45	19.4	10	7.5	55	15.1
Academy	22	9.5	14	10.5	36	9.9
MECEP	1	C.4	1	0.8	2	0.5
Other	7	3.0	11	8.3	18	4.9
Total	232		133		365	

Military Occupational Specialties. Survey respondents reported their primary, secondary, and tertiary Military Occupational Specialties (MOS) through write-in reponses that were categorized for later analysis. Since the survey population included all Marine Corps officers with primary or secondary MOS's of 1302, Engineer Officer, these responses indicate the exact number of Engineer Officer respondents. MOS 9906, Ground Colonel, includes all colonels, regardless of previous MOS. Their previous primary occupational specialties are indicated by the current secondary specialties. Crosstabulations are included in Contingency Tables U.1 and U.2 of Appendix U. Table 4.4 shows the primary specialties of the company grade respondents. The primary specialties of field grade respondents are included in Table 4.5.

TABLE 4.4

Primary Occupational Specialties of the Company Grade Respondents

MOS	N	%
1302 (Engineer Officer)	213	91.8
1310 (Engineer Equipment Officer)	3	1.3
0402 (Logistics Officer)	7	3.0
0302 (Infantry Officer)	1	0.4
Other	7	3.0
Missing	1	0.4
Total	232	

TABLE 4.5

Primary Occupational Specialties of the Field Grade Respondents

MOS	N	%
1302 (Engineer Officer)	92	69.2
9906 (Ground Colonel)	23	17.3
0402 (Logistics Officer)	7	5.3
0302 (Infantry Officer)	1	0.8
3502 (Motor Transport Officer)	3	2.3
Other	7	5.3
Total	133	

Secondary and tertiary occupational specialties of company grade respondents are shown in Table 4.6. Those of field grade respondents are included in Table 4.7.

Satisfaction with Military Occupational Specialty (MOS) Selection. Respondents were asked to select one of the following statements to describe their primary MOS:

1- I chose it, and I am satisfied.
2- I chose it, and I am dissatisfied.
3- I did not choose it, and I am satisfied.
4- I did not choose it, and I am dissatisfied.

Table 4.8 shows the respondents' satisfaction with their primary MOS.

TABLE 4.6

Secondary and Tertiary Occupational Specialties
of Company Grade Respondents

MOS	Secondary N	Secondary %	Tertiary N	Tertiary %
1302 (Engineer Officer)	14	6.0	3	1.3
1310 (Engineer Equipment Officer)	22	9.5	5	2.2
0402 (Logistics Officer)	6	2.6	2	0.9
1330 (Facilities O ficer)	6	2.6	3	1.3
3502 (Motor Transport Officer)	6	2.6	1	0.4
Other	47	20.3	19	8.2
None	131	56.5	199	85.8
Total	232		232	

<u>Previous Primary MOS</u>. The respondents indicated that they previously held a different primary MOS according to the following statistics:

	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
Yes	53	22.8	39	29.3	92	25.2
No	179	77.2	94	70.7	273	74.8
Total	232		133		365	

Previous primary occupational specialty responses were placed into four categories for later analysis. Table 4.9 shows the previous occupational specialties held by those who responded "Yes" to this question.

TABLE 4.7

Secondary and Tertiary Occupational Specialties of Field Grade Respondents

MOS	Secondary N	Secondary %	Tertiary N	Tertiary %
1302 (Engineer Officer)	36	27.1	2	1.5
0302 (Infantry Officer)	7	5.3	2	1.5
1310 (Engineer Equipment Officer)	4	3.0	5	3.8
0402 (Logistics Officer)	16	12.0	6	4.5
1330 (Facilities Officer)	15	11.3	17	12.8
3502 (Motor Transport Officer)	9	6.8	5	3.8
Other	32	24.1	37	27.8
None	14	10.5	59	44.4
Total	232		232	

TABLE 4.8

Distribution of Respondents' Satisfaction with MOS Selection

Response	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
1	198	85.3	110	82.7	308	84.4
2	12	5.2	4	3.0	16	4.4
3	19	8.2	18	13.5	37	10.1
4	3	1.3	1	0.8	4	1.1
Total	232		133		365	

TABLE 4.9

Previous Primary Military Occupational Specialties Held By Respondents

MOS	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
1302 (Engineer Officer)	12	22.6	25	64.3	37	40.2
75XX (Aviation)	11	20.8	1	2.6	12	13.0
Enlisted	16	30.2	4	10.2	20	21.8
Other	6	11.3	4	10.2	10	10.9
No Response	8	15.1	5	12.7	13	14.1
Total	53		39		92	

Current Assignment. Respondents reported their current assignment in one of the following categories:

1- FMF (engineer-type command).
2- FMF (non-engineer-type command).
3- Non-FMF (engineer-related BILMOS/duties).
4- Non-FMF (other).

Table 4.10 shows the current assignments of the respondents.

Current Billet Military Occupational Specialty (MOS). The occupational specialties of the current billets of respondents indicate how many Combat Engineer Officers are now working within their specialties. The four company grade and five field grade categories were chosen to include specialties of concern to this research.

Table 4.11 includes the current billet occupational specialties of the respondents.

TABLE 4.10

Distribution by Current Assignment of Respondents

Category	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
1	104	44.8	27	20.3	131	35.9
2	25	10.8	21	15.8	46	12.6
3	44	19.0	50	37.6	94	25.8
4	59	25.4	34	25.6	93	25.5
Missing	--	--	1	0.8	1	0.3
Total	232		133		365	

TABLE 4.11

Distribution of Respondents by Current Billet MOS

Company Grade MOS	Company Grade N	Company Grade %	Field Grade MOS	Field Grade N	Field Grade %
1302	124	53.4	1302	44	33.1
1310	7	3.0	9906	16	12.0
0402	18	7.8	1310	3	2.3
Other	83	35.8	0402	17	12.8
			Other	53	39.8
Total	232			133	

Training for Combat Engineer Officer Assignments. Respondents were asked to indicate which of 10 sources of training best prepared them for Combat Engineer Officer assignments and to rate that source of training using the following scale:

1- Thorough; prepared me well.
2- Broadly-based; provided some useful knowledge.
3- Too broad, generalized; limited practical value.
4- Unrelated to actual duty requirements.
5- Nonexistent.

Table 4.12 shows the sources of training selected by the respondents. The ratings of the training sources are shown in Table 4.13. Contingency Tables U.3 and U.4 in Appendix U show the relationships among the responses to the two questions.

Training for Current Assignments. Company grade respondents selected the source of training that best prepared them for their current assignments and described that training using the following scale:

1- Thorough; prepared me well.
2- Broadly-based; provided some useful knowledge.
3- Too broad, generalized; limited practical value.
4- Unrelated to actual duty requirements.
5- Nonexistent.

The field grade survey questionnaire did not include this set of questions because of the diversity of assignments, for which training is usually not provided.

Table 4.14 shows the sources of training which best prepared company grade respondents for their current assignments. The evaluations of those sources of training are included in Table 4.15. Contingency Table U.5 in Appendix U shows the crosstabulation of the responses.

TABLE 4.12

Sources of Training that Provided the Best Preparation for Combat Engineer Assignments

Source	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
Civilian Educ/Experience	41	17.7	18	13.5	59	16.2
Precommissioning Training	2	0.9	--	--	2	0.5
The Basic School	11	4.7	3	2.3	14	3.8
Engr Off Basic Course	66	28.4	30	22.6	96	26.3
On-The-Job Experience	96	41.4	32	24.1	128	35.1
Correspondence Course	3	1.3	2	1.5	5	1.4
Engr Off Advanced Course	11	4.7	46	34.6	57	15.6
Amphibious Warfare School	--	--	--	--	--	--
None	2	0.9	2	1.5	4	1.1
Total	232		133		365	

TABLE 4.13

Training Source Descriptions

Description	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
1	63	27.2	43	32.3	106	29.0
2	146	62.9	84	63.2	230	63.0
3	15	6.5	2	1.5	17	4.7
4	2	0.9	2	1.5	4	1.1
5	6	2.6	1	0.8	7	1.9
Total	232		133		365	

TABLE 4.14

Sources of Training that Best Prepared Company Grade Respondents for Their Current Assignments

Source	N	%
Civilian Educ/Experience	26	11.2
Precommissioning Training	1	0.4
The Basic School	11	4.7
Engr Officer Basic Course	21	9.1
On-The-Job Experience	127	54.7
Correspondence Course	2	0.9
Engr Officer Advanced Course	9	3.9
Amphibious Warfare School	2	0.9
None	23	10.3
Other	8	3.4
Total	230	

TABLE 4.15

Training Source Descriptions

Description	N	%
1	88	37.9
2	99	42.7
3	10	4.3
4	5	2.2
5	26	11.2
No Response	4	1.7
Total	232	

Level of Education. The levels of education of the respondents are shown in Table 4.16. The "Other" category includes two respondents who are currently working toward a baccalaureate degree (company grade) and a PhD in operations analysis (field grade).

Major Area of Study. The major areas of study of the respondents were placed into the following categories for analysis:

1- Engineering
2- Math
3- Science
4- Liberal Arts
5- Other.

Table 4.17 shows the distribution of respondents in these categories. Table 4.18 includes a detailed listing of areas of study within each grade.

Assignments in Engineer-Type Commands. The following categories were used to code the assignments of respondents to engineer-type commands:

0 None
1 Combat Engineer Battalion (CEB)
2 Engineer Support Battalion
3 Wing Engineer Squadron (WES)
4 All
5 Combat Engineer Battalion and Engineer Support Battalion
6 Combat Engineer Battalion and Wing Engineer Squadron
7 Engineer Support Battalion and Wing Engineer Squadron.

Table 4.19 shows the distribution of respondents by assignment in engineer-type commands.

TABLE 4.16

Education Level of Survey Respondents

Level	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
Associate Degree	12	5.2	5	3.8	17	4.7
Baccalaureate	133	57.3	35	26.3	168	46.0
Baccalaureate + Hrs	56	24.1	26	19.5	82	22.5
Masters	23	9.9	42	31.6	65	17.8
Masters + Hrs	6	2.6	24	18.0	30	8.2
Other	2	0.9	1	0.8	3	0.8
Total	232		133		365	

TABLE 4.17

Major Areas of Study

Area	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
Engineering	47	20.3	45	33.8	92	25.2
Math	9	3.9	4	3.0	13	3.6
Science	29	12.5	12	9.0	41	11.2
Liberal Arts	78	33.6	46	34.6	124	34.0
Other	67	28.9	26	19.5	93	25.5
Missing	2	0.9	--	--	2	0.5
Total	232		133		365	

TABLE 4.18

Specific Areas of Study

Area	0-1	0-2	0-3	Grade 0-4(S)	0-4	0-5	0-6
Aerospace Engineering	-	-	1	-	-	-	-
Anthropology	-	-	-	-	-	1	-
Animal Science	-	1	3	-	-	-	-
Agriculture/Ag Engineering	2	1	2	-	3	1	1
Archeology	1	1	2	-	-	-	1
Accounting	-	3	-	-	-	-	-
Biology	-	3	5	-	-	-	-
Business Administration	-	1	11	-	5	2	1
Chemical Engineering	-	-	-	-	-	1	-
Civil Engineering	3	8	8	-	6	5	3
Computer Science	1	1	2	-	-	-	-
Chemistry	-	2	3	-	2	-	-
Communications	-	2	1	-	-	-	-
Criminal Justice	-	1	16	-	-	-	-
Electrical Engineering	-	-	1	-	2	1	3
Engineering, General	1	2	7	-	3	3	3
Education	3	5	19	4	6	7	2
Economics	-	4	-	-	3	1	1
English/Literature	1	2	4	1	1	4	-
Finance	2	-	1	-	-	-	-
Forestry	-	1	2	-	-	-	1
Geology	1	1	3	-	-	-	1
Geography	-	-	2	-	1	-	-
History	1	3	6	-	8	1	1
Industrial Engineering	-	-	-	-	2	2	-
Mechanical Engineering	2	-	2	-	4	-	3
Math	2	2	1	-	2	2	-
Management	1	4	4	-	3	4	-
Oceanography/Ocean Engineering	1	1	3	-	2	-	-
Operations Analysis	-	2	1	-	-	-	-
Public Administration	-	2	1	-	-	-	-
Psychology	1	2	4	1	4	1	-
Physics	1	-	-	-	1	1	-
Political Science	1	2	11	-	6	2	1
Recreation Administration	1	-	2	-	1	-	-
Sociology	1	2	2	-	1	-	-
Studio Art	1	-	-	-	-	-	-
Social Studies	-	1	4	-	4	-	-
Urban Planning/Development	-	1	1	-	-	-	-
Zoology	1	-	-	-	1	-	-

TABLE 4.19

Distribution of Respondents by Assignment in Engineer-Type Commands

Assignments	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
0	4	1.7	1	0.8	5	1.4
1	70	30.2	25	18.8	95	26.0
2	47	20.3	8	6.0	55	15.1
3	12	5.2	2	1.5	14	3.8
4	7	3.0	33	24.8	40	11.0
5	41	17.7	42	31.6	83	22.7
6	30	12.9	14	10.5	44	12.1
7	21	9.1	8	6.0	29	7.9
Total	232		133		365	

Facilities/Facilities Maintenance Officer Assignments. The following statistics show the distribution of respondents who have held facilities-related billets:

	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
Yes	66	28.4	79	59.4	145	39.7
No	166	71.6	54	40.6	220	60.5
Total	232		133		365	

Respondents also indicated the source of training that best prepared them for these assignments and described that source of training. The "Other" source category included short courses provided by the U.S. Navy and the U.S. Army. Table 4.20 shows the responses to the sources of training. The evaluations of the sources are included in Table 4.21.

TABLE 4.20

Sources of Training for Facilities-Related Billets

Source	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
On-The-Job Experience	35	53.0	48	60.8	83	57.2
Command-Sponsored Programs	--	--	1	1.2	1	0.7
Training Was Not Available	15	22.7	15	19.0	30	20.8
Other	9	13.6	14	17.7	23	15.8
Missing	7	10.7	1	1.3	8	5.5
Total	66		79		145	

TABLE 4.21

Description of Facilities-Related Training

Description	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
1	11	16.7	12	15.2	23	15.9
2	16	24.2	28	35.4	44	30.3
3	3	4.4	4	5.1	7	4.8
4	4	6.1	3	3.8	7	4.8
5	27	40.1	32	40.5	59	40.8
Missing	5	7.5	--	--	5	3.4
Total	66		79		145	

Part II. This part of the survey questionnaires gathered respondents' perceptions of the relative importance and adequacy of the entry-level training at The Basic School and the Marine Corps Engineer School. The results of the company grade and field grade survey questionnaires are presented below.

Company Grade. Company grade respondents answered two questions for each course area and task. The question

> **Based on your personal experience, what is your perception of the relative importance of this course area to your past and current assignments?**

was answered using the following five-point increasing scale:

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important.

The question

> **Do you feel that you received adequate training/education in this course area?**

was answered by circling "yes," "no," or "undecided." Additionally, each respondent was provided the opportunity to list course areas or tasks that require increased or decreased emphasis. These comments and those of field grade respondents are included in Appendix V. The comments were edited for spelling and grammar errors. The comments are analyzed in Chapter V.

Table 4.22 shows the respondents' perceptions of The Basic School. The perceptions of The Combat Engineer Officer Course at the Marine Corps Engineer School are reported in Table 4.23. The tables

present the number of responses for the course areas and tasks and the mean of interval level data. The percentages of response for each area are not included because the number of Combat Engineer Officers who feel that certain areas are more important is used by curriculum planners to evaluate programs of evaluation. The category "Missing" or "No Response" is not included due to the minimal importance. The maximum number of "Missing" for any course areas or tasks was six.

Field Grade. Field grade respondents also answered two questions for each course area and task. The question

> **Based on your perceptions as a commander/supervisor of company grade Combat Engineer Officers, what is the relative importance of this course area to their duty assignments?**

was answered using the following five-point increasing scale:

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important.

The question

> **Do you feel that company grade Combat Engineer Officers you have observed received adequate training in this course area?**

was answered by circling "yes," "no," or "undecided." The comments concerning areas that require increased or decreased emphasis are included in Appendix V. The comments are analyzed in Chapter V.

Table 4.24 includes the respondents' perceptions of The Basic School. Table 4.25 shows the preceptions of the Combat Engineer Officer Course. The maximum number of "Missing" responses was six.

TABLE 4.22

Company Grade Combat Engineer Officer Perceptions of The Basic School

Course Area	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Personnel/General Administration	1	6	32	63	126	4.346	100	103	23
Logistics	2	6	48	64	110	4.191	55	150	22
Leadership	4	6	23	34	163	4.504	170	50	28
Management	2	11	37	89	90	4.109	120	81	28
Aviation	20	52	94	45	18	2.952	164	35	30
Military Law	3	5	45	106	71	4.030	144	61	24
Land Navigation/Map Reading	1	8	29	60	132	4.365	208	8	13
Tactics/Infantry Weapons	3	8	40	65	114	4.213	192	19	18
Marksmanship	5	15	59	71	80	3.896	201	9	18
Combat Intelligence	4	24	65	82	55	3.696	84	107	37
Drill/Command/Ceremonies	4	30	66	86	44	3.591	117	33	17
Nuclear, Biological, Chemical Warfare	3	14	40	68	105	4.122	66	143	20
Field Engineering	1	4	17	68	139	4.485	93	115	21
Communications	1	10	35	92	91	4.144	126	85	18
Organization and Staff Functioning	4	11	56	91	67	3.900	109	96	24
Supporting Arms	4	14	56	67	88	3.965	131	72	25
Physical Training/Riot Control	6	35	64	73	51	3.559	171	34	24
First Aid	3	9	50	76	91	4.061	178	31	19
History/Tradition	5	25	85	72	41	3.522	186	24	17

TABLE 4.23

Company Grade Combat Engineer Officer Perceptions of the Combat Engineer Officer Course

Task Inventory	Relative Importance 1	2	3	4	5	Mean	Training Adequacy Yes	No	Und
Mobility Enhancing Operations									
Bridging gaps	8	12	22	45	137	4.299	95	104	21
Reducing obstacles	4	7	15	54	145	4.462	115	85	22
Maintaining lines of communications	3	11	31	80	100	4.169	65	127	29
Establishing tactical landing zones	4	18	38	82	81	3.978	76	120	26
Countermobility Operations									
Plan obstacles	5	5	15	43	157	4.520	85	118	18
Employ minefields	5	7	19	48	145	4.433	77	120	25
Construct obstacles	4	6	16	55	144	4.462	91	110	21
Survivability Operations									
Constructing field fortifications	3	7	15	68	130	4.413	87	107	30
Applying countersurveillance measures	6	20	52	86	59	3.771	51	143	30
Masking unit movements	5	19	43	75	80	3.928	49	150	24
General Engineering Skills									
Construction of base camps	2	16	43	75	89	4.036	68	137	19
Construction of concrete structures	5	24	55	77	64	3.760	101	98	25
Use of equipment technical publications	5	6	32	64	119	4.265	69	135	21
Requisitioning of repair parts	7	6	23	51	139	4.367	53	155	17
Completion of equipment records	5	8	24	67	119	4.287	62	146	17

TABLE 4.24

Field Grade Combat Engineer Officer Perceptions of The Basic School

Course Area	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Personnel/General Administration	1	4	37	56	31	3.868	42	67	18
Logistics	1	1	18	44	65	4.326	26	83	19
Leadership	1	5	16	106	5	4.766	93	18	18
Management	1	6	28	48	46	4.023	40	59	30
Aviation	7	29	75	13	5	2.845	80	22	27
Military Law	1	7	50	56	15	3.597	66	38	25
Land Navigation/Map Reading	-	2	12	45	70	4.419	103	12	14
Tactics/Infantry Weapons	1	1	15	46	66	4.357	100	13	16
Marksmanship	4	16	46	42	21	3.465	116	4	9
Combat Intelligence	-	11	32	55	31	3.822	60	49	20
Drill/Command/Ceremonies	2	20	52	44	11	3.326	104	11	14
Nuclear, Biological, Chemical Warfare	2	4	27	45	51	4.078	37	69	23
Field Engineering	-	3	11	21	94	4.597	52	62	15
Communications	-	4	21	57	47	4.140	62	47	20
Organization and Staff Functioning	-	8	39	55	27	3.782	59	52	18
Supporting Arms	-	4	28	48	49	4.101	69	37	23
Physical Training/Riot Control	2	26	43	40	17	3.344	99	11	18
First Aid	1	6	39	46	37	3.868	98	12	19
History/Tradition	5	17	49	42	16	3.364	102	12	14

TABLE 4.25

Field Grade Combat Engineer Officer Perceptions of the Combat Engineer Officer Course

Task Inventory	Relative Importance 1	2	3	4	5	Mean	Training Adequacy Yes	No	Und
Mobility Enhancing Operations									
Bridging gaps	1	-	11	26	91	4.597	55	50	23
Reducing obstacles	-	1	6	29	93	4.659	68	43	18
Maintaining lines of communications	-	3	17	44	65	4.326	57	49	22
Establishing tactical landing zones	-	7	18	53	52	4.154	61	41	27
Countermobility Operations									
Plan obstacles	2	-	5	37	86	4.577	59	55	17
Employ minefields	2	2	3	38	85	4.554	67	42	20
Construct obstacles	-	3	5	37	85	4.569	64	40	25
Survivability Operations									
Constructing field fortifications	-	-	14	45	71	4.438	68	44	17
Applying countersurveillance measures	-	4	39	54	33	3.892	40	53	36
Masking unit movements	1	8	34	51	36	3.869	35	59	35
General Engineering Skills									
Construction of base camps	2	4	36	38	50	4.000	50	57	21
Construction of concrete structures	4	13	40	46	27	3.608	63	48	18
Use of equipment technical publications	-	5	25	53	47	4.092	47	61	21
Requisitioning of repair parts	-	9	33	38	50	3.992	41	67	21
Completion of equipment records	2	6	30	52	40	3.938	54	58	17

Part III. This section of the survey questionnaire contained a listing of 117 tasks that were evaluated by the respondents as described below.

Company Grade. Company grade respondents evaluated the relative time spent on each task in previous or current Combat Engineer Officer billets. The following scale was used to report the relative time spent:

(0) Zero time spent
(1) Minimal
(2) Moderate
(3) Considerable.

Perceptions of training adequacy were measured by answering the question

> Do you feel that you have been adequately trained to perform this task?

with "yes," "no," or "undecided" responses. The responses are included in Appendix W. The maximum number of "Missing" responses was nine.

Field Grade. Field grade respondents reported their perceptions of the relative importance of each task by using the following scale:

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important.

Perceptions of training adequacy were reported by answering the question

> Do you feel that current institutional training programs adequately prepare Combat Engineer Officers to perform this task?

by circling "yes," "no," or "undecided." Responses are included in Appendix X. The maximum number of "Missing" responses was five.

General comments concerning the education and training of Marine Corps Combat Engineer Officers are included in Appendix Y. The comments were edited for basic grammar and spelling errors and represent the views of the respondents.

V. Analysis

This chapter contains the analysis of data collected by the two survey questionnaires. Each of the 14 research questions is analyzed separately. Included are the perceptions of company grade and field grade Marine Corps Combat Engineer Officers of the education and training programs at The Basic School and at the Combat Engineer Officer Course. Where applicable, findings are compared to previous analyses discussed in Chapter II. The findings are expanded to include inferences that could have an important influence on curricula planning even though they cannot be explicitly supported by statistical analysis.

Research Question 1

What are the tasks currently performed by company grade Combat Engineer Officers?

The 117 tasks included in Part III of the survey questionnaires are a combination of 109 tasks taken from the U.S. Army Military Qualification Standards II (Engineer, Specialty Code 21) (Appendix O) and eight tasks that were added to make the list complete for purposes of this research. Those eight tasks are listed last.

Company grade officers were asked to rate each task according to the relative time they currently spend or have spent performing the task.

The following scale was used:

0- Zero time spent

1- Minimal

2- Moderate

3- Considerable.

Frequencies and condescriptive statistics were used to analyze the responses.

The most conservative analysis of the tasks consisted of assigning a percentage to each of the four responses as follows:

Response	Relative Time Spent	%
0	Zero	0
1	Minimal	1-33
2	Moderate	34-66
3	Considerable	67-100

A mean relative time spent rating of 1.50 or greater for a task indicates that the task is performed by at least one-half of the respondents 50 percent of the time. The following 21 tasks met this requirement:

Task	Mean
Enforce explosive and demolition safety requirements	2.03
Supervise calculation and placement of military explosives	1.74
Conduct engineering reconnaissance mission	1.61
Supervise camouflage of organic vehicles/equipment	1.74
Schedule earthmoving equipment operations	1.74
Supervise use, accountability, and maintenance of engineer handtools	2.29
Interpret plans and specifications	1.53

Inspect maintenance of pioneer tool sets	2.25
Inventory platoon tools	2.29
Inspect maintenance of fiber/wire rope and rigging equipment	1.59
Define key event/activities and establish milestones	2.04
Establish time requirements and develop master schedule	1.82
Review project work progress in relation to plans, schedules, and costs	1.63
Modify/update plans, schedules and budgets	1.56
Identify and analyze project work problems	1.72
Estimate a project duration	1.82
Estimate requirements for personnel and equipment for a construction project	1.80
Organize construction work forces	1.79
Estimate construction materials	1.73
Employ your forces as infantry	1.62
Advise the supported commander on the proper employment of combat engineers in support of offensive/defensive operations	1.89

This method selected only those tasks that are performed by 50 or more percent of the respondents.

The standards of Air Force task analysis discussed in Chapter II set the minimum criteria to be applied in the design or revision of basic resident training courses at 30 percent of a group performing any given task (3:5-7). When the selection criterion was at least 77 respondents performing a task at the "moderate" or "considerable" level, 33 tasks were added to the above list. The additional tasks are marked with a single asterisk in Appendix W.

A more liberal analysis considers all tasks that have a mean relative time spent of at least 1.00. These tasks are performed by the majority of respondents, even though the relative percentage of time spent could be as low :s one percent. The 34 tasks marked with double asterisks (**) in Appendix W joined the list of tasks performed when this analysis was conducted.

The 11 tasks with the lowest mean relative times spent indicate the importance of looking at the actual percentage of respondents who perform a task. These tasks are shown in Table 5.1 with the percentage of respondents who perform each task at different levels. The task with the lowest relative time spent is performed at some time by 19.82 percent of the respondents.

TABLE 5.1

Tasks with the Lowest Mean Relative Time Spent (Company Grade)

Task	Mean
Supervise preparation of decoy fighting positions	0.50
Prepare target folders (nonnuclear)	0.32
Design Medium Girder Bridge (MGB)	0.41
Classify masonry arch bridges	0.45
Design anchorage system	0.50
Plan/conduct rafting operations	0.46
Conduct ice/snow removal operations	0.46
Develop a reinforcing steel schedule	0.31
Design a boom derrick	0.41
Supervise construction of theater of operations building	0.50
Coordinate employment of Navy Mobile Construction Battalion (NMCB) assets	0.44

Therefore, this research concludes that company grade Combat Engineer Officers perform all tasks listed in Part III of the survey

questionnaires. No additional tasks were added to the list by the respondents. The individual responses for each task indicate that some type of indoctrination or training may be required. The criteria used in the Air Force Curriculum Validation Study are very important to this analysis and are summarized below.

- The minimum criterion to be applied in the design or revision of basic resident training courses was set at 30 percent of a group performing any given task.

- Performance of a task by at least 50 percent of a group indicated that some formal training might be necessary.

- Performance of a task by 30-50 percent of a group indicated that some type of background or fundamental training might be considered (3: 5-7).

Research Question 2

What tasks do field grade Combat Engineer Officers perceive to be important with respect to effective completion of combat engineer assignments?

Field grade respondents reported their perceptions of relative importance for each task listed in Part III of the survey questionnaires by using the following scale:

1- Not necessary

2- Somewhat unimportant

3- Usually helpful

4- Somewhat important

5- Critically important.

The ranges of the mean responses and the number of tasks within each range are shown below.

Range	Category	N
4.50 to 5.00	Critically important	4
3.50 to 4.49	Somewhat important	103
2.97 to 3.49	Usually helpful	10

Only 10 of the 117 tasks were rated "usually helpful." All other tasks were rated at least "somewhat important," as shown in Appendix X.

Therefore, this research concludes that the field grade Combat Engineer Officers perceive that all tasks listed in Part III of the survey questionnaires are relatively important, regardless of billet or engineer-type organization.

Research Question 3

> What are the perceptions of company grade Combat Engineers about the adequacy of entry-level training received at The Basic School?

Table 4.22 shows the number of responses for each of the three categories, "yes," "no," and "undecided," for each of the course areas in the current program of instruction at The Basic School. The percentage of "undecided" responses ranged from 5.67 percent to 16.23 percent.

The training in 13 of the 19 course areas was perceived to be adequate by at least 50 percent of the respondents.

The training received in the following four course areas was rated inadequate by the majority of respondents:

Course Area	Training Adequacy: Yes N	Yes %	No N	No %	Undecided N	Undecided %
Logistics	55	24.2	150	66.1	22	9.7
Combat Intelligence	84	36.8	107	46.9	37	16.3
Nuclear, Biological, Chemical Warfare	66	28.8	143	62.4	20	8.8
Field Engineering	93	40.6	115	50.2	21	9.2

When the "undecided" responses were joined with the "no" responses, the two course areas listed below joined those listed above.

Course Area	Training Adequacy: Yes N	Yes %	No N	No %	Undecided N	Undecided %
Personnel/General Administration	100	44.2	103	45.6	23	10.2
Organization and Staff Functioning	109	47.6	96	41.9	24	10.5

A ONEWAY analysis of variance was conducted on each course area with the relative importance ratings as the dependent variables and the perceptions of training adequacy as the independent variables. The analysis of variance insured that course areas which were considered by the respondents to be inadequately trained were also considered relatively important.

The following null hypothesis was tested for each course area:

H_o: There is no difference in the mean relative importance ratings among the three groups of training adequacy responses.

H_a: There is a statistically significant difference in the mean relative importance ratings among the three groups of training adequacy responses.

The null hypothesis was rejected for 10 of the 19 course areas at a significance level of 0.050. In nine of the 10 course areas the respondents who perceived that training is inadequate also had the highest mean relative importance rating. The results of the analyses of variance are shown in Appendix Z.

This research concludes that company grade Combat Engineer Officers perceive that the following course areas are not adequately taught at The Basic School to meet their early career needs:

Logistics

Combat Intelligence

Nuclear, Biological, Chemical Warfare

Field Engineering.

The relatively high percentage of "undecided" responses should be of concern to the curriculum planners at The Basic School. Those ratings could indicate that the respondents have either not been in a billet where they could test their knowledge in those areas or are not sure that the training was adequate. If the percentage of "no" and "undecided" responses is greater than 50 percent, there is reasonable doubt that

training in the course area is perceived to be adequate. In addition to the four course areas listed above, less than 50 percent of the respondents thought that training was adequate in the following course areas:

Personnel/General Administration

Organization and Staff Functions

The statistics in Appendix Z show that the respondents who answered "no" to training adequacy in every course area also thought that the course area was at least "somewhat important" (at least a mean of 4.0 on a scale of 1.0 to 5.0). This indicates that the six course areas listed above are considered important to the careers of the company grade Combat Engineer Officer respondents.

The "field engineering" course as currently structured is adequately taught. However, as the remarks in Appendix Y indicate, officers in other occupational fields are not taught how to properly employ and use the unique talents of the combat engineers.

Research Question 4

What are the perceptions of field grade Combat Engineer Officers about the adequacy of entry-level training received at The Basic School?

Table 4.24 shows the number of responses of field grade officers for each of the three categories, "yes," "no," and "undecided," in each of the course areas in the current program of instruction at The Basic School. The percentages of "undecided" responses ranged from 3.93 percent to 23.26 percent. Eleven of the 19 course areas were perceived to be adequately taught by at least 50 percent of the respondents.

Training in the following four course areas was rated inadequate by the majority of respondents:

Personnel/General Administration

Logistics

Management

Nuclear, Biological, Chemical Warfare.

When the "undecided" responses were added to the "no" responses the four course areas listed below joined those listed above.

Combat Intelligence

Field Engineering

Comunications

Organization and Staff Functioning

A ONEWAY analysis of variance was conducted for each course area with the relative importance ratings as the dependent variables and the perceptions of training adequacy as the independent variables. The analysis of variance insured that course areas which were considered inadequately trained by the respondents were also considered relatively important. The following null hypothesis was tested:

H_o: There is no difference in the mean relative importance ratings among the three groups of training adequacy responses.

H_a: There is a statistically significant difference in the mean relative importance ratings among the three groups of training adequacy responses.

The null hypothesis was rejected for 10 of the 19 course areas at a significance level of 0.050. In each of those course areas the respondents who rated training adequacy "no" had the highest mean relative importance rating. The results of the analyses of variance are shown in Appendix AA.

This research concludes that field grade Combat Engineer Officers consider that the following course areas are inadequately taught at The Basic School:

Personnel/General Administration

Logistics

Management

Combat Intelligence

Nuclear, Biological, Chemical Warfare

Field Engineering

Communications

Organization and Staff Functioning.

The relatively high percentage of "undecided" responses is indicative of the relatively small number of field grade Combat Engineer Officer billets. Many of the general comments stated that answers were given based on experience four to six years previously.

Research Question 5

What are the perceptions of company grade Combat Engineer Officers about the adequacy of MOS training received at the Marine Corps Engineer School and through post-entry-level training programs?

Table 4.23 shows the number of responses for each of the three categories, "yes," "no," and "undecided," for each of the tasks in the task inventory of the current program of instruction at the Combat Engineer Officer Course. The percentage of "undecided" responses ranged from 8.14 percent to 13.39 percent.

Training in one of the 15 tasks, "reducing obstacles," was considered adequate by the respondents. Training in the following 10 tasks was perceived to be inadequate by the majority of respondents:

Maintaining lines of communications

Establishing tactical landing zones

Plan obstacles

Employ minefields

Applying countersurveillance measures

Masking unit movements

Construction of base camps

Construction of concrete structures

Use of equipment technical publications

Requisitioning of repair parts

Completion of equipment records.

When the "undecided" responses were added to the "no" responses, the remaining four tasks joined those listed above.

A ONEWAY analysis of variance was conducted on each task with the relative importance rating as the dependent variable and the perceptions of training adequacy as the independent variables. The analyses of

variance were conducted to insure that tasks which were considered inadequately trained by the respondents were also considered relatively important. The following null hypothesis was tested:

H_o: There is no difference in the mean relative importance ratings among the three groups of training adequacy responses.

H_a: There is a statistically significant difference in the mean relative importance ratings among the three groups of training adequacy responses.

The null hypothesis was rejected for 10 of the 14 course areas at significance level of 0.050. The respondents who perceive that training is inadequate also rated those tasks as at least "somewhat important." The results of the analyses of variance are included in Appendix BB.

As Appendix W shows, fifty-five (or 47.01 percent) of the tasks listed in Part III of the company grade survey questionnaires were rated as adequately trained by the respondents. Those tasks are marked by the letter "a." Twenty-six tasks were considered adequately trained by less than 50 percent of the respondents. Those tasks are marked by the letter "i" in Appendix W.

This research concludes that the training received at the Combat Engineer Officer Course is considered inadequate by the company grade Combat Engineer Officers. Only one of the 15 tasks, "reducing obstacles," was considered adequately trained by the majority of the respondents. Forty-seven percent of the company grade Combat Engineer Officer tasks were perceived as being adequately trained by at least one-half of the

respondents. These findings indicate that the training for the majority of those tasks is considered inadequate.

Research Question 6

> **What are the perceptions of field grade Combat Engineer Officers about the adequacy of MOS training received at the Marine Corps Engineer School and the post-entry-level training programs?**

The number of responses for each of the categories "no," "yes," and "undecided," for each of the tasks in the current program of instruction is shown in Table 4.25. The percentage of "undecided" responses ranged from 12.23 percent to 27.91 percent.

Training in the following three tasks was considered adequate by field grade respondents:

Reducing obstacles

Employ minefields

Constructing field fortifications.

One task, "requisitioning of repair parts," received a majority of responses for inadequate training. When the "undecided" responses were combined with the "no" responses, the other 11 tasks in the task inventory joined the one above with less than 50 percent of the respondents perceiving the training as adequate.

A ONEWAY analysis of variance was run on each task with the relative importance as the dependent variables and the perceptions of training adequacy as the independent variables. The following null hypothesis was tested:

H_o: There is no difference in the mean relative importance ratings among the three groups of training adequacy responses.

H_a: There is a statistically significant difference in the mean relative importance ratings among the three groups of training adequacy responses.

The null hypothesis was rejected for seven of the 15 tasks. As can be seen in Appendix CC, none of the tasks that were perceived to have inadequate training was related below "somewhat important."

Appendix X shows that 37.6 percent of the tasks in Part III of the field grade survey questionnaire are perceived to be adequately trained during entry-level and post-entry level training.

This research concludes that field grade Combat Engineer Officers consider only the three tasks below as adequately trained by the Combat Engineer Officer Course.

Reducing obstacles

Employ minefields

Constructing field fortifications

Over 62 percent of the tasks previously discussed under Research Question 2 are considered inadequately trained during entry- and post-entry-level training.

The relatively high percentage of "undecided" responses indicates the diversity of the assignments of field grade officers. Comments on the questionnaires indicated that many of the respondents were unsure of their response because they had not recently held an engineer billet.

Research Question 7

What is the effect of assignment on individual perceptions about required tasks and training adequacy?

The discussion of Combat Engineer Officer Fleet Marine Force duty assignments in Chapter II highlights the differences in tasks performed by each of the three engineer-type commands. Question 15 in the company grade questionnaire and question 13 in the field grade questionnaire collected data concerning current and past assignments by asking the following question:

> To what engineer-type commands have you been assigned? (You may circle more than one.)
>
> A. Combat Engineer Battalion
> B. Engineer Support Battalion
> C. Wing Engineer Squadron

The responses were recoded from three-digit variables ("1" for each circled letter, "0" for each uncircled letter) to one-digit variables as shown below.

Old Variable	New Variable	Category
000	0	None
100	1	Combat Engineer Battalion (CEB)
010	2	Engineer Support Battalion (ESB)
001	3	Wing Engineer Squadron (WES)
111	4	All
110	5	CEB and ESB
101	6	CEB and WES
011	7	ESB and WES

The new variables were then used as the independent variables in two tests of statistical independence. Subprogram CROSSTABS was used to test statistical independence of nominal-level data obtained from the responses to questions concerning training adequacy. Subprogram ONEWAY was used to test the statistical independence of interval-level data obtained from the responses to questions concerning perceptions of relative importance.

The following null hypothesis was tested in each case:

H_o: There is no difference in the responses among the seven groups of assignments.

H_a: There is a statistically significant difference in the responses among the seven groups of assignments.

The results of the tests are presented below for company grade and field grade respondents.

Company Grade.

The Basic School. There was no statistically significant difference in the responses concerning relative importance or training adequacy of the course areas taught at The Basic School.

Combat Engineer Officer Course. The responses to three of the 15 tasks contained in the program of instruction at the EOBC were found to be significantly different at a significance level of 0.050. Table 5.2 shows the results of those tests. The results of the TUKEY multiple comparison tests are summarized below:

Task	Outlier
Masking enemy movements	CEB significantly lower (3.63)
Construction of concrete structures	WES significantly higher (4.500)
Completion of equipment records	WES significantly higher (4.500)

The responses concerning training adequacy of the CEOC tasks were significantly different for two tasks. Tables 5.3 and 5.4 show the results of the CROSSTABS analysis. The significantly different responses to both tasks came from those respondents who have served only in a Wing Engineer Squadron. They perceived that the instruction was adequate in those tasks.

Combat Engineer Officer Tasks. Responses concerning relative importance were significantly different for 58.12 percent (68 of 117) of the tasks listed in Part III of the survey questionnaire. The results are shown in Appendix DD. Respondents perceive as important those tasks that are performed by the engineer-type command to which they are assigned.

The responses concerning training adequacy were significantly different for 25 of the tasks. The results of the tests are summarized in Appendix EE.

Field Grade. There was not a statistically significant difference in the responses concerning relative importance or training adequacy for any course area or task among the field grade respondents.

TABLE 5.2

ONEWAY Analysis of Variance:
Relative Importance by Assignment to Engineer-Type Commands

Course Area/ Task	F Prob	Group	Count	Mean	Standard Deviation
Masking Unit Movements	0.000	CEB	70	3.63	1.05
		ESB	44	4.30	.88
		WES	12	4.75	.45
		ALL	7	3.86	.90
		CEB + ESB	39	3.92	1.06
		CEB + WES	30	4.07	.83
		ESB + WES	20	4.60	.82
Total			222	4.03	
Construction of Concrete Structures	0.004	CEB	70	3.93	1.09
		ESB	44	4.50	.79
		WES	12	4.75	.62
		ALL	7	4.14	.90
		CEB + ESB	39	4.46	.72
		CEB + WES	30	4.07	1.14
		ESB + WES	20	4.50	.69
Total			222	4.26	
Completion of Equipment Records	0.031	CEB	69	4.01	1.10
		ESB	43	4.49	.77
		WES	12	4.75	.45
		ALL	7	4.29	.95
		CEB + ESB	39	4.38	.96
		CEB + WES	30	3.97	1.27
		ESB + WES	20	4.50	.61
Total			220	4.26	

TABLE 5.3

Crosstabulation of CEOC Task ("Constructing field fortifications") Training Adequacy with Assignment to Engineer-Type Commands

Command		No	Yes	Undecided	Row Total
None	(N)	4	--	--	4
	(%)	1.8	--	--	1.8
CEB	(N)	35	24	10	69
	(%)	15.6	10.7	4.5	30.8
ESB	(N)	22	17	4	43
	(%)	9.8	7.6	1.8	19.2
WES	(N)	--	10	2	12
	(%)	--	4.5	0.9	5.4
All	(N)	3	2	2	7
	(%)	1.3	0.9	0.9	3.1
CEB + ESB	(N)	16	18	5	39
	(%)	7.1	8.0	2.2	17.4
CEB + WES	(N)	16	11	2	29
	(%)	7.1	4.9	0.9	12.9
ESB + WES	(N)	11	5	5	21
	(%)	4.9	2.2	2.2	9.4
Column Total	(N)	107	87	30	224
	(%)	47.8	38.8	13.4	100.0

This research concludes that the effect of assignment on individual perceptions of required tasks and training adequacy is significant for company grade Combat Engineer Officers. The analyses show that the perceived training needs of company grade officers are dependent upon the type of engineer-type command to which they have been assigned.

TABLE 5.4

Crosstabulation of CEOC Task ("Masking unit movements") Training Adequacy with Assignment to Engineer-Type Commands

Command		No	Yes	Undecided	Row Total
None	(N)	3	--	1	4
	(%)	1.3	--	0.4	1.8
CEB	(N)	48	13	7	68
	(%)	21.5	5.8	3.1	30.5
ESB	(N)	28	11	4	43
	(%)	12.6	4.8	1.8	19.3
WES	(N)	2	8	2	12
	(%)	0.9	3.6	0.9	15.4
ALL	(N)	5	1	1	7
	(%)	2.2	0.4	0.4	3.1
CEB + ESB	(N)	24	9	6	39
	(%)	10.8	4.0	2.7	17.5
CEB + WES	(N)	24	4	1	29
	(%)	10.8	1.8	0.4	13.0
ESB + WES	(N)	16	3	2	21
	(%)	7.2	1.3	0.9	9.4
Column Total	(N)	150	49	24	223
	(%)	67.3	22.0	10.8	100.0

Research Question 8

What is the effect of civilian education on individual perceptions of required tasks and training adequacy?

The highest level of education and the major area of study were reported by each respondent. The level of education was reported in one

of the following categories:

A. Associate Degree

B. Baccalaureate Degree

C. Baccalaureate Degree + graduate hours

D. Masters Degree

E. Masters Degree + hours

F. Other.

The major area of study was written-in by each respondent. The responses reported in Table 4.18 were grouped into the categories listed below for analysis purposes.

1- Engineering

2- Math

3- Science

4- Liberal Arts

5- Other

Subprogram ONEWAY was used to run an analysis of variance on responses concerning relative importance. CROSSTABS was used with the data from the responses related to training adequacy. The results of the analyses of course areas and tasks are reported below. Separation of the three distinct parts of the questionnaires is not required in this research since the major implications from these results are on officer procurement and educational requirements in certain occupational fields.

Company Grade.

Education Level. None of the responses concerning training adequacy was significantly different as a function of the level of education.

However, there was a statistically significant difference in the responses concerning relative importance in 16 course areas and tasks. The results of the ONEWAY tests are shown in Appendix FF. The results indicate that significant difference in perception exist between those respondents with a masters degree and those at other education levels.

Major Area of Study. No significant difference existed among the responses concerning training adequacy with the major area of study as the independent variable.

The responses in seven course areas and tasks were significantly different at a significance level of 0.050. They are listed in Appendix GG. The results indicate that although differences of perceived relative importance exist, each course area and task must be analyzed separately to determine the influences of areas of study.

Field Grade.

Education Area. Table 5.5 shows the only course area or task that had significantly different responses concerning training adequacy. There was no significant difference in the perceptions of field grade officers about relative importance as a function of education area.

TABLE 5.5

Crosstabulation of Task ("Supervise construction of tracked vehicle fighting position") Training Adequacy with Major Area of Study

N Tot Pct	No	Yes	Undecided	Row Total
Engineering	20 15.6	10 7.8	15 11.7	45 35.2
Math	2 1.6	1 0.8	1 0.8	4 3.1
Science	5 3.9	5 3.9	1 0.8	11 8.6
Liberal Arts	10 7.8	26 20.3	8 6.3	44 34.4
Other	8 6.3	13 10.2	3 2.3	24 18.8
Column Total	45 35.2	55 43.0	28 21.9	128 100.0

Major Area of Study. No significant difference existed among the respondents concerning training adequacy with the major area of study as the independent variable.

Only nine of the course areas and tasks had significantly different responses as a function of major area of study. Those course areas and tasks are shown in Appendix HH.

Therefore, this research concludes that the effect of civilian education on individual perceptions of required tasks and training adequacy is minimal. The results of the analyses show that differences in

perceptions as a function of civilian education are isolated and should have little bearing on curriculum planning. The variances in responses due to masters degrees are caused by the special billets held by those respondents. The results also indicate that the Marine Corps should not be overly concerned about joining the other services in making an engineering degree a prerequisite to becoming a Combat Engineer Officer.

Research Question 9

What perceived source of training best prepares Combat Engineer Officers for combat engineer assignments?

Table 5.6 shows the percentages of company grade and field grade respondents for each source of training. Company grade respondents perceive that on-the-job training and the Combat Engineer Officer Course provide the best training for combat engineer assignments. Field grade respondents perceive that the Engineer Officer Advanced Course and the Combat Engineer Officer Course provide the best training for combat engineer assignments.

When the responses from the two survey questionnaires were combined, on-the-job training and the Engineer Officer Basic Course became the perceived best sources of training.

This research concludes that there is no perceived source training that best prepares Combat Engineer Officers for combat engineer assignments. However, the company grade choices of on-the-job training and the field grade choice of the Engineer Office Advanced Course are significant.

TABLE 5.6

Source of Training Perceived to Best Prepare
Combat Engineer Officers for Engineer Assignments

Source	Company Grade N	Company Grade %	Field Grade N	Field Grade %	Total N	Total %
Civilian education/experience	41	17.7	18	13.5	59	16.2
Precommissioning training	2	0.9	--	--	2	0.5
The Basic School	11	4.7	3	2.3	14	3.8
Engr Officer Basic Course	66	28.4	30	22.6	96	26.3
On-the-job training	96	41.4	32	24.1	128	35.1
Correspondence Courses	3	1.3	2	1.5	5	1.4
Engr Officer Advanced Course	11	4.7	46	34.6	57	15.6
Amphibious Warfare School	--	--	--	--	--	--
None	2	0.9	2	1.5	4	1.1
Other	--	--	--	--	--	--
Total	232		133		365	

Company grade officers are introduced to a small part of combat engineering during the CEOC. Insufficient time exists for training in all areas. Many of the tasks that confront them during their initial assignments must be learned through on-the-job training. This means that unit-level training programs play a crucial role in the education and training of company grade officers.

Nearly 35 percent of field grade resopndents feel that the Engineer Officer Advanced Course at Ft. Belvoir is the best source of training. The impacts of the relatively small number of Marine Corps engineer officers who attend the school and the proposed changes to the program of instruction need to be analyzed.

Research Question 10

What tasks or duties require additional emphasis in current education and training programs?

Respondents were invited to write-in course areas or duties which they think require additional emphasis at The Basic School and the Combat Engineer Officer Course. Significant results are presented below.

The Basic School. Greater than 20 percent of the company grade respondents feel that the following course areas currently taught at The Basic School require additional emphasis:

Personnel/General Administration

Logistics

Nuclear, Biological, Chemical Warfare.

Additionally, company grade officers added the following areas to those listed in the questionnaires:

Practical Application

Maintenance Management

Supply Functions

Communications (Writing/Speaking).

"Logistics" is the only course area that is perceived to require additional emphasis by field grade respondents.

Appendix II contains a summary of the responses.

Combat Engineer Officer Course. According to company grade respondents, the tasks listed below require additional emphasis at the EOBC.

Bridging gaps

Plan obstacles

Employ minefields

Use of technical publications

Requisitioning of repair parts

Completion of equipment records

Additionally, the following nine tasks were added to the task inventory:

Maintenance Management

Supply Functions

Engineer Officer Functions

Utilities Operations

Bulk Fuel Operations

Engineer Equipment Utilization

Practical Application

Combined Arms Operations

Expeditionary Airfield (EAF).

Field grade respondents think that additional emphasis is required in the following tasks:

Reducing obstacles

Plan obstacles

Employ minefields.

Appendix JJ contains a summary of the responses.

This research concludes that the following courses taught at The Basic School require additional emphasis:

Personnel/General Administration

Logistics

Nuclear, Biological, Chemical Warfare

Supporting Arms.

The tasks listed below from the program of instruction at the Combat Engineer Officer Course require additional emphasis.

Bridging gaps

Plan obstacles

Employ minefields

Use of equipment technical publications

Requisitioning of repair parts

Completion of equipment records

The following three areas also require increased emphasis:

Maintenance management

Supply functions

Engineer officer functions.

The course areas and tasks listed above indicate that the respondents are concerned with the areas of equipment maintenance and engineer officer functioning. The latter area includes the roles played by the Combat Engineer Officer when providing combat or combat service support to other units as part of a task-organized force.

The number of responses for each task are important regardless of the total percentage. Curriculum planners should carefully study the number of respondents who feel that they have not received enough training in a course area or task to perform their assigned duties.

Research Question 11

What tasks or duties require reduced emphasis in current education and training programs?

No course area or task was perceived to require reduced emphasis by greater than 6.90 percent of the respondents. The company grade responses are contained in Appendix II. Those of field grade officers are summarized in Appendix JJ.

Research Question 12

What is the effect of the Military Occupational Specialty (MOS) selection process at The Basic School on the perceptions about education and training adequacy of Combat Engineer Officers?

Respondents described their primary MOS in one of the following ways:

1- I chose it, and I am satisfied.

2- I chose it, and I am dissatisfied.

3- I did not choose it, and I am satisfied.

4- I did not choose it, and I am dissatisfied.

The results of each survey questionnaire are shown below.

Response	Company Grade N	Company Grade %	Field Grade N	Field Grade %
Chose/satisfied	196	85.2	107	82.3
Chose/dissatisfied	12	5.2	4	3.1
Did not choose/satisfied	19	8.3	18	13.8
Did not choose/dissatisfied	3	1.3	1	0.8

The question was included in the questionnaires so that the independence of MOS selection and training perceptions could be statistically tested. The small cell sizes for all but the first response reduced the credibility of ONEWAY and CROSSTABS analyses.

The responses among the respondents were significant for 11 course areas and tasks from the company grade questionnaire and seven from the field grade questionnaire. In each case, the disproportionate cell sizes accounted for the statistical significance.

This research concludes that the MOS selection process at The Basic School has no effect on the perceptions of training adequacy or relative importance.

Research Question 13

What is the effect of the commissioning source on Combat Engineer Officer perceptions about individual education and training programs?

The distribution of respondents by source of commissioning is shown below:

Source	Company Grade N	Company Grade %	Field Grade N	Field Grade %
Officer Candidate School (OCS)	60	26.9	53	41.4
Platoon Leaders Class (PLC)	92	41.3	41	32.0
NROTC (MO)	43	19.3	9	7.0
USNA/USMA/USAFA	20	9.0	13	10.2
MECEP	1	0.4	1	0.8
Other	7	3.1	11	8.6

Subprogram CROSSTABS was used to test the statistical independence of perceptions of training adequacy grouped by commissioning source. ONEWAY tested the relative importance evaluations. The results are printed below.

Company Grade. The responses concerning training adequacy were significantly different in only one course area. The results shown in Table 5.7 show that NROTC graduates were the only group that perceived "organization and staff functioning" was not adequately taught at The Basic School.

TABLE 5.7

Crosstabulation of Course Area ("Organization and Staff Functioning") Training Adequacy with Source of Commissioning

Source		No	Yes	Undecided	Row Total
OCS	(N)	27	31	6	64
	(%)	11.8	13.5	2.6	27.9
PLC	(N)	37	40	14	91
	(%)	16.2	17.5	6.1	39.7
NROTC(MO)	(N)	26	17	2	45
	(%)	11.4	7.4	0.9	19.7
Service Academy	(N)	5	15	1	21
	(%)	2.2	6.6	0.4	9.2
MECEP	(N)	—	--	1	1
	(%)	--	--	0.4	0.4
Other	(N)	1	6	--	7
	(%)	0.4	2.6	--	3.1
Column Totals	(N)	96	104	24	229
	(%)	41.9	47.6	10.5	100.0

The perceptions of relative importance were significantly different for 12 tasks. When the "MECEP" category is disregarded, the outliers are consistently those respondents in the NROTC, service academy, or previous enlisted ("Other") categories. The results are shown in Appendix KK.

Field Grade. The training adequacy of two tasks from the Combat Engineer Officer Course task inventory was perceived differently with source of commissioning as the independent variable. Tables 5.8 and 5.9 show the results of those comparisons. No clear trend exists between the two.

TABLE 5.8

Crosstabulation of CEOC Task ("Reducing obstacles") Training Adequacy with Source of Commissioning

Source		No	Yes	Undecided	Row Total
OCS	(N)	13	29	11	53
	(%)	10.0	22.3	8.5	40.8
PLC	(N)	11	26	4	41
	(%)	8.5	20.0	3.1	31.5
NROTC(MO)	(N)	7	1	2	10
	(%)	5.4	0.8	1.6	7.7
Service Acad	(N)	6	6	2	14
	(%)	4.6	4.6	1.5	10.8
MECEP	(N)	--	1	--	1
	(%)	--	0.8	--	0.8
Other	(N)	6	5	--	11
	(%)	4.6	3.8	--	8.5
Column Total	(N)	43	68	18	130
	(%)	33.1	52.3	13.8	100.0

Perceptions of relative importance were significantly different in eight course areas or tasks. The results of the ONEWAY analyses of variance are shown in Appendix LL. No distinct trend exists in the results.

This research indicates that the effects of commissioning source are not conclusive. The perceptions of the various commissioning sources by company grade respondents, who need the best preparation possible by The Basic School and the Combat Engineer Officer Course, and the field

TABLE 5.9

Crosstabulation of CEOC Task ("Construction of base camps") Training Adequacy with Source of Commissioning

Source		No	Yes	Undecided	Row Total
	(N)	23	16	12	51
OCS	(%)	18.0	12.5	9.4	39.8
	(N)	14	21	6	41
PLC	(%)	10.9	16.4	4.7	32.0
	(N)	8	1	1	10
NROTC(MO)	(%)	6.3	0.8	0.8	7.8
	(N)	5	8	1	14
Service Acad	(%)	3.9	6.3	0.8	10.9
	(N)	--	--	1	1
MECEP	(%)	--	--	0.8	0.8
	(N)	7	4	--	11
Other	(%)	5.5	3.1	--	8.6
	(N)	57	50	21	128
Column Total	(%)	44.5	39.1	16.4	100.0

grade officers, who through their experience know what training is important to the successful Combat Engineer Officer, are distinctly different. The important result of this analysis is that differences of opinion do exist. Officers who were previously enlisted and those who were commissioned from four-year programs have different perceptions of training adequacy and the relative importance of certain course areas and tasks. This must be considered in acquisition and training programs.

Research Question 14

What factors can be used to predict individual perceptions of the education and training of Marine Corps Combat Engineer Officers?

Previous research questions have evaluated the effects of single variables on individual responses. Stepwise multiple regression was used to analyze the interaction of critical independent variables. No attempt was made to use linear equations to mathematically predict perceptions. Instead, the analysis shows what variables are important in developing education and training programs.

The perceptions of relative importance of the course areas and tasks taught at The Basic School and the Combat Engineer Officer Course are the dependent variables. The following variables were used in the multiple regression analysis:

- Grade
- Years of Commissioned Service
- Source of Commissioning
- MOS selection process
- Level of education
- Major area of study.

The first two independent variables listed above are interval scale data. The latter four contain nominal scale data. Dummy variables were created for each nominal level variable to facilitate regression analysis. Dummy variables entered the models if values were significantly different than predicted.

The following criteria were used to stop the introduction of variables into each model:

1. Coefficient of determination (R^2) reached tangent (the introduction of the next variable no longer added to the explanation of error).

2. Mean squared errors (MSE) minimized (no longer decrease).

3. Coefficients (b) became unstable.

4. The incoming variable was no longer significant at a significance level of 0.050.

Tables 5.10 through 5.13 show the results of the multiple regression analyses. The R^2 values indicate the proportion of variation in the responses concerning training adequacy that is explained by the independent variables (0.510 equals 5.1 percent).

The coded independent variables listed below can be used to read Tables 5.10 through 5.13.

- Q2- Grade
- Q3- Years of commissioned service
- Q4- Source of commissioning
  - A1- OCS
  - A2- PLC
  - A3- NROTC(MO)
  - A4- Service academy
  - A5- MECEP*
  - A6- Other*

*Those dummy variables marked with an asterisk (*) have extremely small cell sizes.

- Q8- MOS selection process
    - B1- Chose/satisfied
    - B2- Chose/dissatisfied*
    - B3- Did not choose/satisfied
    - B4- Did not choose/dissatisfied*
- Q18- Major area of study
    - C1- Engineering
    - C2- Math
    - C3- Science
    - C4- Liberal arts
    - C5- Other
- Q19- Assignment to engineer-type commands
    - D0- None*
    - D1- CEB
    - D2- ESB
    - D3- WES
    - D4- All
    - D5- CEB + ESB
    - D6- CEB + WES
    - D7- ESB + WES

The significance of the results is the confirmation that several factors affect the perceptions of relative importance. The strongest independent variable is duty assignment. Variances in perceptions indicate that company grade respondents consider training for their current

*Those dummy variables marked with an asterisk (*) have extremely small cell sizes

job important. The requirements of this training vary significantly depending on the engineer-type command involved.

Therefore, this research concludes that there is no valid way to mathematically predict individual perceptions of education and training requirements. However, the results of the regression analyses show that certain factors, such as source of commissioning, major areas of study, and duty assignments can be used to insure that internal evaluations of programs of instruction are not biased.

TABLE 5.10

Multiple Regression Analysis: Course Areas of The Basic School (Company Grade)

Dependent Variable	Independent Variable	sig	b	R^2
Personnel/General Administration	D2	.029	.151	.0225
	C3	.049	-.281	
Logistics	C3	.005	-.370	.0623
	Q3	.014	.146	
Leadership	A5	.003	-.525	.0771
	D4	.008	-.228	
	D1	.035	-.272	
Management	D3	.030	.192	.0404
	B4	.036	-.272	
Aviation	C1	.000	.628	.0638
	A1	.018	.372	
Military Law	B4	.003	-.357	.0606
	Q2	.016	-.161	
Land Navigation/Map Reading	D4	.044	-.168	.0179
Tactics/Infantry Weapons	B4	.025	-.306	.0220
Marksmanship	B4	.000	-.513	.0703
	A1	.015	.362	
Combat Intelligence	D1	.036	.303	.0193
Drill/Command/Ceremonies	A4	.005	-.157	.0904
	B4	.003	-.414	
	D1	.035	.295	
Nuclear, Biological, Chemical Warfare	B4	.001	-.453	.0437
Field Engineering	B4	.000	-.556	.1412
	D2	.005	.160	
Communications	B4	.023	-.296	.0553
	Q3	.032	-.115	
	D3	.047	-.176	
Organization & Staff Functioning	B4	.003	-.483	.0930
	A4	.003	-.161	
	D3	.043	.180	
Supporting Arms	B4	.036	-.374	.0200
Physical Training/Riot Control	--	--	--	--
First Aid	A5	.030	-.413	.0213
History/Tradition	A1	.008	.319	.0900
	A4	.014	-.145	
	D3	.024	.215	

TABLE 5.11

Multiple Regression Analysis: Course Areas of The Basic School (Field Grade)

Dependent Variable	Independent Variable	sig	b	R^2
Personnel/General Administration	D1	.023	-.445	.0622
Logistics	--	--	--	--
Leadership	A6	.000	-.109	.2300
	D2	.000	-.403	
	D1	.007	-.342	
Management	C2	.010	-.575	.0870
	B3	.016	-.180	
Aviation	--	--	--	--
Military Law	D1	.002	-.549	.1493
	Q2	.011	-.187	
	D3	.015	-.432	
Land Navigation/Map Reading	A5	.049	-.287	.0303
Tactics/Infantry Weapons	--	--	--	--
Marksmanship	--	--	--	--
Combat Intelligence	D5	.039	.068	.1111
	A6	.013	-.119	
	C5	.040	.083	
Drill/Command Ceremonies	--	--	--	--
Nuclear, Biological Chemical Warfare	Q3	.004	-.185	.1003
	B4	.047	-.450	
Field Engineering	D3	.001	-.562	.1142
	A2	.018	.160	
Communications	A6	.028	-.092	.0376
Organization & Staff Functioning	A3	.043	.209	.0323
Supporting Arms	--	--	--	--
Physical Training/Riot Control	--	--	--	--
First Aid	Q2	.001	-.282	.1854
	A2	.007	.228	
	A3	.007	.290	
	D4	.023	.100	
	B4	.033	.465	
History/Tradition	B2	.012	-.625	.0785
	D1	.027	-.500	

TABLE 5.12

Multiple Regression Analysis:
Tasks of the Combat Engineer Officer Course (Company Grade)

Dependent Variable	Independent Variable	sig	b	R^2
Bridging gaps	--	--	--	--
Reducing obstacles	D1	.022	.285	.0237
Maintining lines of communication	C2	.037	.283	.0198
Establishing tactical landing zones	C3	.005	-.498	.0354
Plan obstacles	C3	.008	-.158	.0316
Employ minefields	C3	.037	-.134	.0198
Construct obstacles	C3	.015	-.146	.0267
Constructing field fortifications	C3	.046	-.122	.0182
Applying countersurveillance measures	--	--	--	--
Masking unit movements	C2	.009	-.479	.0313
Construction of base camps	D1	.002	-.455	.1105
	D3	.019	.231	
	D7	.021	.077	
Construction of concrete structures	D1	.000	-.574	.0846
	C5	.022	-.071	
Use of equipment technical publications	D1	.000	-.601	.0701
	D6	.026	.-071	
Requisitioning of repair parts	D1	.008	-.393	.0414
	D6	.035	-.072	
Completion of equipment records	D1	.002	-.461	.0592
	D6	.008	-.091	

TABLE 5.13

Multiple Regression Analysis:
Tasks of the Combat Engineer Officer Course (Field Grade)

Dependent Variable	Independent Variable	sig	b	R^2
Bridging gaps	A6	.005	-.100	.1730
	D2	.009	-.324	
	C2	.011	-.437	
	D1	.026	-.348	
Reducing obstacles	A1	.037	-.227	.0555
Maintaining lines of communication	D7	.002	-.136	.0753
Establishing tactical landing zones	A2	.007	.219	.0560
Plan obstacles	Q3	.018	-.120	.0792
	D7	.022	-.090	
Employ minefields	--	--	--	--
Construct obstacles	--	--	--	--
Constructing field fortifications	A1	.000	-.435	.1669
	A6	.006	-.095	
	B4	.008	-.431	
	B3	.037	-.114	
Applying countersurveillance measures	A2	.029	.168	.0365
Masking unit movements	D7	.049	-.094	.0300
Construction of base camps	B3	.001	-.256	.0991
	A2	.030	.192	
Construction of concrete structures	Q2	.010	-.260	.0328
	A6	.020	-.126	
Use of equipment technical publications	C4	.003	.112	.1415
	A3	.004	.262	
	A2	.028	.170	
Requisitioning of repair parts	Q3	.001	-.231	.1705
	C4	.007	.115	
Completion of equipment records	C4	.005	.116	.1728
	B3	.013	-.118	
	Q3	.045	-.130	

VI. Conclusions and Recommendations

This chapter contains the conclusions that can be drawn from this evaluation of the education and training of Marine Corps Combat Engineer Officers. Recommendations are provided for consideration by Headquarters, U.S. Marine Corps, The Basic School, and The Marine Corps Engineer School in making education and training programs more responsive to the needs of company grade officers.

Conclusions

The data analysis used to answer the 14 research questions provided the basis for drawing specific conslusions. However, other information presented in this research, such as respondent comments and the methodologies and results of similar studies by other services, was used to make inferences about the overall education and training process.

Sixty-eight percent of the census population responded to the survey. A population correction factor was not used in the statistical analysis because the grade distribution of respondents was considered representative and there are no known involuntary reasons why any participant could not respond.

The conclusions of this research are summarized below.

1. The tasks listed in Part III of the survey questionnaires are performed by company grade Combat Engineer Officers. Field grade officers also consider these tasks important to combat engineer duty assignments.

However, the task list cannot be considered complete for the purpose of educating and training Marine Corps engineers since it was adapted from a U.S. Army study. Marine Corps engineers need a comprehensive list of tasks which contains every task that should be introduced or taught to officers at various stages of their careers. Several lists may be required, including a general list and specific lists for each engineer-type command. These separate lists are essential because, as this research has shown, education and training needs are a function of assignment.

2. Education and training at The Basic School is generally considered important and adequate by Combat Engineer Officers. However, the following course areas in the current program of instruction require more emphasis and/or practical application to meet the needs of Combat Engineer Officers:

Personnel/General Administration

Logistics

Nuclear, Biological, Chemical Warfare

Field Engineering.

Included in the "Logistics" area are maintenance management and supply functions. The "Field Engineering" course needs to include more instruction on the effective use and employment of combat engineers as a supporting combat arm.

3. Training provided by the Marine Corps Engineer School is perhaps as comprehensive as it can be in a 10-week course, but voids exist in

task training. The high percentage of tasks for which training was perceived inadequate indicates the voids. Combat Engineer Officers of all grades do not consider the training adequate to meet their needs. On-the-job training is recognized as a viable source of training by company grade officers. This finding is similar to those of U.S. Army and the U.S. Air Force occupational analyses previously discussed.

The program of instruction implemented in 1983 was not evaluated by the respondents, except perhaps by a few second lieutenants. The new expanded course is an improvement, but as long as officers are required to learn their skills "in the field," unit training programs must support their needs. Each engineer command is currently free to develop its own training program according to the requirements of supported units and the contingency roles of the particular Marine Amphibious Force (MAF).

There are two types of tasks for which education and training are required at the unit level: general tasks, which are performed by all Combat Engineer Officers regardless of command, and unique tasks, which are a function of the combat support or combat service support mission of a particular command. The Military Qualification Standards (MQS) developed by the U.S. Army are examples of general tasks that provide each officer with known proficiency requirements and sequential progression through increased skill levels.

Standardized unit-level training programs do not currently exist. The Marine Corps Engineer School and the Marine Corps Institute together have the capability to establish the framework for a standard training

package that could be available to any command for officer training, especially for those officers in their first four years of service. These packages would help the young officers transition from a combat support environment to that of combat service support or from Division to Wing to Force Service Support Group combat engineering.

4. More than one-third of the field grade respondents feel that the Engineer Officer Advanced Course provided them the best training for their combat engineer assignments. This percentage could mean that every officer who has attended the course believes it is the best source of training, since less than one-third of eligible officers attend annually.

The Amphibious Warfare Course provides many essential elements to career development, such as cross-training, combined armed tactics, and the opportunity to meet and work with peers. However, the subcourses available through the Marine Corps Institute provide the only Combat Engineer Officer exposure to the course since only three officers attend each year.

The need for a career level Marine Corps engineer officer course exists. A resident course for all officers is not feasible. However, a correspondence or extension course is feasible and would give every officer the opportunity to learn and become more proficient in his profession. Many course areas of the Engineer Officer Advanced Course could be consolidated into a career level course by the Marine Corps Institute with the technical guidance of the Marine Corps Engineer School.

5. Source of commissioning, level of education, major area of study, and the Military Occupational Specialty (MOS) selection process have no significant effect on the perceptions of education and training requirements or training adequacy. However, assignment to engineer-type commands is a very strong predictor of officer perceptions. Respondents feel a need to be trained to perform the tasks currently confronting them in their job. This is another reason why standardized unit-level training should be used to supplement the introductory course at the Marine Corps Engineer School.

6. The external evaluation program of the Marine Corps Engineer School is incomplete. The evaluation process does not require input from field commands. Input is "invited," and the response rate is usually small. The primary sources of course validation are recent students and their supervisors.

The new program of instruction attempts to meet the needs of Combat Engineer Officers. The Instructional Systems Development program requires front-end analysis, which is basically the results of Part III of the questionnaires used in this research. However, external evaluation should include a continuous analysis of alternatives required to meet the needs of young officers. Training requirements that cannot be met in residence must be addressed through other sources of training such as expanded correspondence courses and Self Teaching Exportable Packages (STEP) shown in Table 2.13.

7. One of the research objectives that has not been discussed concerns the accuracy of the Military Occupational Specialty description of MOS 1302, Engineer Officer. Each of the analyses of research questions contributed to meeting this objective.

The MOS description reflects the duties and tasks of combat engineers performing primarily combat service support missions; it does not adequately describe combat support roles. The description should contain a synopsis of uniquely-engineer duties and tasks of each of the engineer-type commands.

8. The reasons for differences between the relative time spent by company grade respondents performing tasks and the perceived relative importance by field grade respondents could indicate problems in unit-level training opportunities. Perhaps company grade officers are not being given the opportunity to actually perform the tasks considered important by senior engineers. Fiscal and time constraints during exercises greatly restrict these opportunities. Unit-level training, which centers around these exercises, currently does not provide young officers the chance to actually perform those important duties and tasks.

Recommendations

The recommendations listed below are offered for consideration in efforts by Headquarters, U.S. Marine Corps, The Basic School, and The Marine Corps Engineer School to improve the education and training of Marine Corps Combat Engineer Officers.

1. Compile comprehensive task lists to provide a framework for sequential training beginning at the Marine Corps Engineer School and continuing through the rank of captain.

2. Create a program of standardized unit-level training packages which would be available to field commands for use in local training programs.

3. Create more opportunity for career development by providing a Marine Corps career-level combat engineer correspondence/extension course to senior first lieutenants and captains who are unable to attend resident courses.

4. Revise the MOS description currently listed in Marine Corps Order P1200.7D to reflect an equal balance between engineer combat support and combat service support roles.

5. Expand the external evaluation program of the Marine Corps Engineer School to include an annual assessment of the needs of all Combat Engineer Officers, regardless of Marine Amphibious Force or engineer-type command.

6. Consider the perceptions of training adequacy and comments reported by this research in changing programs of instruction to be more responsive to the needs of company grade Combat Engineer Officers.

Appendix A: Description of Academic Subjects Taught at the Basic Officer Course, The Basic School

(Adapted from 38:III-1 - III-4)

Map Reading and Land Navigation. Instruction is designed to enable the officer student to read maps, and aerial photographs, utilize the compass, navigate on land in daylight or at night, and to prepare map overlays and tactical maps.

Communications. Instruction is designed to introduce to the officer student Marine Corps communications at the small unit level with emphasis on equipment, procedures, and security measures.

Intelligence. Instruction is designed to provide the officer student with an understanding of combat intelligence methodology, agencies within the Marine Corps that support the intelligence mission and an introduction to the forces that may potentially pose a threat to Marine Corps operating forces.

Combat Service Support. Instruction is designed to enable the officer student to recognize the functions, structure and requirement for Combat Service Support, as well as gain an understanding of the interralationship between supply and maintenance in the Fleet Marine Force.

First Aid. Instruction is designed to provide the officer student with an understanding of essential life saving steps, first aid procedures, and evaluation/evacuation techniques necessary for first aid application in garrison or field environments.

Physical Training and Conditioning. Instruction is designed to provide the officer student with an understanding of the nature and importance of physical fitness including ways it can be developed and maintained; to enable the officer student to attain and maintain a level of physical fitness for service in the Fleet Marine Force, and to supervise a unit's physical fitness training program.

Leadership. This instruction is designed to provide each officer student with an understanding of the characteristics, principles, and techniques of leadership within the concept of the Marine Corps Leadership Program. Instructional hours are divided into combat leadership, personal development, and fundamental education in those subjects that will allow the student to fulfill the duties and responsibilities of a company grade officer in garrison.

Drill, Command, and Ceremonies. Instruction is designed to enable the officer student to drill a unit, conduct inspections, and participate in parades and ceremonies, with particular emphasis on those individual skills and duties which are required of all company grade officers.

History, Traditions, Roles and Missions. Instruction is designed to provide the student with an understanding of the historical purpose for and evolution of the Marine Corps roles and missions, the traditions of the Marine Corps and the challenging issues facing the Marine Corps today.

Military Law. Instruction is designed to provide the student with an understanding of military law with particular emphasis on those aspects

which relate specifically to the duties common to all company grade officer assignments in the Fleet Marine Force.

Amphibious Operations. Instruction is designed to provide the officer student with the fundamentals of amphibious operations, to enable him to recognize naval amphibious unit composition, and to understand the Marine Corps role in amphibious operations.

Nuclear, Biological, and Chemical Warfare Defense. Instruction is designed to provide the officer student with an understanding of nuclear, biological, and chemical warfare defense. Particular emphasis is placed on those aspects of NBC defense which directly affect the company grade officer at the small unit level.

Tactics. Instruction provides the officer student, regardless of the MOS subsequently assigned, with the basic knowledge required by a company grade officer at the small unit level concerning the concepts for ground offensive and defensive tactics. Performance oriented training enables the officer student to apply this knowledge and these techniques by formulating tactical plans, issuing combat orders, and in leading a rifle squad/platoon, including attachments, under simulated combat conditions. Included is instruction and application in the planning and comduct of combat patrols, helicopterborne operations, tank-infantry tactics, mechanized operations, military operations in urban terrain, and introduction to rifle company operations.

Aviation. Instruction is designed to provide the officer student with an understanding of the primary and collateral missions of Marine

aviation, to understand the coordination required in an air/ground mission and to prepare as well as execute the same. Additionally, aircraft and weapons system identification is stressed.

Supporting Arms. Instruction is designed to provide the student with an understanding of supporting arms available to the small unit commander and to use this support through fire support planning and fire support coordination.

Weapons. Instruction is designed to provide the student with an understanding of the characteristics, capabilities, techniques of fire, employment, preventive maintenance procedures, and inspection techniques for weapons employed at the small unit level in all Fleet Marine Force organizations.

Marksmanship. This instruction enables the student to fire and qualify on a known distance course with the M16 rifle and the .45 caliber pistol.

Field Engineering. Instruction is designed to provide the student with an understanding of the principles of field engineering, including military demolitions, emplacements/wire obstacles, and mine/countermine operations that are common to all company grade officers.

Company Instruction. Company Instruction Time (CIT) is designed to provide the officer student and company staff with the time required to complete those requirements not related to formal instruction but necessary for graduation.

Appendix B: Task Inventory--Basic Officer Course, The Basic School (Adapted from 38:VI-1 - VI-11)

Duty: Navigate between given points.

Tasks: Interpret marginal information.

Plot an 8-digit grid coordinate.

Construct a declination diagram.

Determine the scale of a map.

Determine the ground distance between two points.

Determine the elevation of a point.

Locate terrain features.

Determine your location by resection.

Determine map symbols common to the infantry battalion.

Construct a map overlay.

Determine the scale of an aerial photo.

Construct a grid north line on an aerial photo.

Navigate between two objectives at night.

Navigate to assigned objectives using aerial photographs.

Determine your location by intersection.

Draw a profile of a terrain area, over a given distance.

Duty: Utilize communications assets at the unit level.

Tasks: Supervise personnel in the employment of communications equipment at the small unit level.

Prepare a TA-1/PT for operation.

Prepare a TA-312 for operation.

Prepare an AN/PRC-77 radio for operation.

Establish a radio net utilizing voice radio procedures.

Transmit a tactical radio message.

Draft a tactical message.

Perform communication security measures.

Perform electronic warfare procedures to counter enemy radio jamming.

Counter enemy radio deception by performing electronic warfare procedures.

Submit a MIJI report.

Construct field expedient antennas.

Duty: Utilize military intelligence assets.

Tasks: Process combat information through the available intelligence channels.

Utilize combat intelligence in military operations.

Duty: Utilize the Combat Service Support elements.

Tasks: Obtain Combat Service Support at the unit level.

Submit supply requisitions at the unit level.

Duty: Administer First Aid.

Tasks: Administer Cardiopulmonary Resuscitation (CPR).

Treat environment related injuries.

Treat traumatic injuries.

Duty: Conduct physical fitness activities.

Tasks: Take a Physical Fitness Test.

Obtain a Water Survival Qualification Rating.

Run the TBS Obstacle Course.

Run the TBS Confidence Course.

Participate in Foot Marches.

Apply the techniques of the Siedler System of rifle/bayonet fighting when engaged in hand-to-hand combat.

Apply the techniques of the O'Neil System when engaged in hand-to-hand combat.

Apply throw techniques when engaged in unarmed combat.

Apply fall techniques when engaged in unarmed combat.

Apply strangle holds when engaged in unarmed combat.

Apply countermoves to constraining holds used in unarmed combat.

Apply offensive techniques when knife fighting.

Apply defensive techniques when knife fighting.

Search a POW.

Run the TBS Endurance Course.

Duty: Conduct drill at the unit level, to include inspections/parades.

Tasks: Form a detail.

Inspect a detail.

Drill a detail.

Perform sword manual.

Duty: Teach subordinates Marine Corps structure.

Tasks: Explain the missions of the U.S. Marine Corps.

Explain the organization of the U.S. Marine Corps.

Explain the mission of the Marine Corps Reserve.

Duty: Perform legal duties at the unit level.

Tasks: Administer Article 31 Warnings.

Conduct a Preliminary Inquiry.

Conduct a JAG Manual Investigation.

Explain the procedures to conduct Article 32 Investigations.

Charge an individual under the Uniform Code of Military Justice.

Determine/collect evidence for an alleged violation of the UCMJ.

Conduct a search of a suspected area.

Restrain an individual who is subject to the UCMJ.

Conduct a non-judicial punishment.

Conduct a summary court-martial.

Serve as a Special Court-Martial board member.

Serve as a General Court-Martial board member.

Explain the rights of the accused going before a Court Martial.

Track the review procedures of a court-martial.

Duty: Lead an amphibious assault at the small unit level.

Tasks: Explain how an amphibious operation is organized.

Explain the contents of an amphibious operations order.

Perform the functional/administrative duties of a rifle platoon commander in an amphibious operation.

Explain ship-to-shore movement procedures.

Perform surface assault techniques.

Load a reinforced rifle company to make an amphibious landing.

Explain the organization of naval gunfire.

Duty: Lead Marines.

Tasks: Conduct discussion group method of training.

Adhere to the USMC philosophy of leadership.

Conform to the styles of leadership.

Apply the concepts of leadership.

Adhere to USMC values.

Conduct training to develop motivation.

Conduct training to develop discipline.

Adhere to the USMC standards of professionalism.

Adhere to the USMC standards of ethics.

Wear the USMC uniform according to regulations.

Conduct training to develop the indicators of leadership.

Counsel subordinates.

Give guidance on family responsibilities.

Conduct a sound personal finance system.

Combat the use of illegal drugs in the Marine Corps.

Prevent the irresponsible use of alcohol in the Marine Corps.

Explain the process an enlisted Marine goes through prior to duty in the FMF.

Integrate new arrivals into a unit.

Develop subordinate leaders.

Conduct an equal opportunity program for minorities.

Adhere to the Marine Corps standards of fraternization.

Adhere to the rules of International Law Regulating the Conduct of Hostilities.

Adhere to the Code of Conduct.

Explain the process for retention of officers in the Marine Corps.

Explain the requirements for officer promotion.

Adhere to the Marine Corps principles of management.

Explain the six elements of systems approach training management.

Explain the Marine Corps Combat Readiness Evaluation System.

Conduct an Essential Subjects Test.

Supervise personnel enrolled in the Marine Corps Institute correspondence program.

Conduct a Veterans Education Assistance Program briefing.

Conduct a lecture.

Write naval correspondence.

Locate a directive by Standard Subject Identification Code.

Draft directives.

Locate specific information in an OQR/SRB.

Assign proficiency/conduct marks.

Track the procedures to have a page 11 entry made.

Explain the requirements for enlisted promotions.

Explain the requirements of reduction in grade.

Explain the requirements to change the Military Occupational Specialty (MOS) of an enlisted Marine due to incompetence.

Serve on a local enlisted screening board.

Conduct a visual audit.

Solve pay problems.

Calculate a leave balance.

Explain the requirements to award a discharge.

Serve as a member of an Administrative Discharge Board.

Write a fitness report rough on yourself.

Write a fitness report.

Handle classified material.

Mark a classified document.

Maintain a platoon commander's notebook.

Explain the responsibilities inherent to any additional duty.

Grant leave.

Prepare a recommendation for a USMC award.

Conduct a field encampment.

Explain the leadership considerations to train in extreme hot weather.

Explain the leadership considerations to train in extreme cold conditions.

Explain the leadership considerations to train in desert conditions.

Perform the duties of the responsible officer.

Maintain equipment for operational readiness.

Explain the role of a staff officer.

Perform the duties of the Officer of the Day.

Perform the duties of the Junior Officer of the Day.

Perform the duties of the Company Duty Officer.

Perform the duties of a Unit Information Officer.

Conduct leadership training.

Format an Operation Plan.

Format an Operation Order.

Duty: Lead a Marine rifle platoon in offensive and defensive combat operations for a limited period of time under emergency conditions.

Tasks: Conduct a squad daylight frontal attack.

Conduct a squad daylight single envelopment.

Conduct a platoon daylight frontal attack.

Conduct a platoon daylight single envelopment.

Conduct a reinforced platoon daylight frontal attack.

Conduct a reinforced platoon daylight single envelopment.

Conduct a reinforced platoon movement to contact.

Conduct a reinforced platoon helicopterborne attack.

Conduct a squad-sized defense.

Conduct a squad-sized offense.

Conduct a platoon-sized defense.

Conduct a squad security patrol.

Conduct a squad ambush patrol.

Conduct a platoon combat patrol.

Conduct a reinforced platoon helicopterborne extract.

Employ the weapons platoon in a company sized offensive operation.

Plan the fire support for a company daylight attack.

Employ a rifle platoon in a company-sized night attack.

Employ a weapons platoon in a company-sized night attack.

Conduct a squad attack on a fortified position.

Conduct a platoon attack on a fortified position.

Conduct a squad attack in a built-up area.

Conduct a squad-sized defense in a built-up area.

Conduct a platoon attack in a built-up area.

Conduct a platoon-sized defense in a built-up area.

Employ the reinforced rifle platoon in a night company-sized defense.

Employ the weapons platoon in a company-sized defense.

Plan the fire support for a company-sized defense.

Participate as a platoon commander in a company helicopterborne attack.

Conduct a platoon-sized single axis tank-infantry attack.

Conduct a platoon-sized converging axis tank-infantry attack.

Conduct a platoon-sized attack using tanks to support by fire.

Employ a rifle platoon in a mobile assault company daylight attack.

Employ a rifle platoon in a mobile assault company defense.

Conduct a reinforced platoon defense against a mechanized enemy.

Employ the reinforced weapons platoon in a countermechanized defense.

Conduct a reconnaissance patrol.

Duty: Utilize NBC defensive measures.

Tasks: Protect self against an NBC attack.

Perform first aid for chemical/biological agents.

Perform decontamination procedures.

Perform operator's maintenance on an M14 series field protective mask (FPM).

Wear NBC protective equipment.

Give warnings for an NBC attack.

Mark a contaminated area.

Explain the U.S. policy on NBC weapons.

Duty: Employ weapons at the small unit level.

Tasks: Engage a target with the M203 grenade launcher.

Engage a target with a hand grenade.

Engage a target with the M16A1 rifle.

Perform operator's maintenance on the M60 machinegun.

Inspect the M60 machinegun for servicability.

Operate the M60 machinegun.

Engage a target with antimechanized weapons.

Duty: Maintain marksmanship skills.

Tasks: Qualify with the M16A1 rifle.

Qualify with the M1911 .45 caliber pistol.

Duty: Employ supporting arms weapons at the unit level.

Tasks: Explain the capabilities of mortars in combat.

Call for indirect fire support.

Adjust indirect supporting arms fires.

Explain the organization for artillery in combat.

Coordinate supporting arms at the unit level.

Duty: Employ Marine aviation assets at the unit level.

Tasks: Explain the role of Marine aviation.

Supervise a Tactical Air Control Party (TACP) controlling aircraft.

Request air assault support.

Supervise the medical air evacuation of casualties.

Explain the procedures to conduct antiair/air defense operations at the small unit level.

Explain the procedures to conduct close air support.

Duty: Employ engineering assets at the unit level.

Tasks: Supervise personnel in the employment of combat engineering assets.

Construct combat engineering structures utilized at the small unit level.

Supervise the laying of mines.

Supervise the neutralization of mines.

Detonate standard military explosives.

Appendix C: External Evaluation Forms Used for the Combat Engineer Officer Course (Source 15)

Supervisor Evaluation Forms

UNITED STATES MARINE CORPS
MARINE CORPS ENGINEER SCHOOL
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO
ACAD/GWK/
5700

From: Academic Department, Marine Corps Engineer School
To: Supervisor of ________________________________

Subj: Field Evaluation of Marine Corps Engineer School Training

Encl: (1) Field Evaluation Materials

1. As an experienced person and a supervisor of a recent school graduate, you are in an ideal position to tell us whether our graduates are meeting job requirements at your unit. The enclosed materials make it possible for you to indicate whether too much or too little emphasis was given to any of the various tasks covered in school. On the final page of this questionnaire we request that you indicate job tasks that are not presently covered in school, but which should be covered in the future. Throughout your completion of these materials we hope you will write down any thoughts you may have about training problems, recommendations for their solution, and any other aspects of school training.

2. Please return these materials in the enclosed envelope within two weeks, if possible. This information will aid us to provide better training in the future.

3. If you have recently completed field evaluation materials for Marine Corps Engineer School there is no need to complete these unless you have some additional recommendations. However, we would appreciate if you would pass these materials on to some other experienced person who is familiar with the above person's work.

Education Specialist

INSTRUCTIONS FOR COMPLETING RATING SCALES

On the following pages tasks are listed which received at least some emphasis in school. Please rate each task on the two scales at the right of the task by circling the most appropriate number. On the "Frequency of Task" scale, select the category that corresponds most closely to the actual frequency with which this task is performed by the recent school graduate that you supervise in his present assignment.

On the "Adequacy of School Training for This Task" scale, select the most appropriate of the following categories:

1. Task requires much more emphasis in school.
2. Training less than adequate for task, increase emphasis.
3. Training adequate for task.
4. Training more than adequate for task, reduce emphasis.
5. Greatly reduce or eliminate training for this task.

(You may skip this "Adequacy" rating for a particular task if that task is never performed and you do not feel you can rate adequacy of training for it.)

In making this rating consider such things as the following:

Problems he may have had performing this task when first required to do it;

The amount of time that was required by you or by others at your unit to bring him "up-to-speed";

Whether, for some reason, the task should have been learned on-the-job instead of in school; and

Whether learning to perform this task in school does not help this man in his present job or will not help him in the forseeable future.

Your experience in your rating makes you uniquely qualified to judge when job tasks need more or less school emphasis. Not only have you already considered the question of what is the proper balance between school training and training on the job, but you can also see the possible future value of training that has little immediate use. We look forward to seeing your ratings of training adequacy and will give them much consideration.

Combat Engineer Officer Course

Listed below are tasks which presently receive at least some emphasis in school. Please rate each task on the scale at the right by circling the most appropriate number. Please feel free to also include your reasons for your rating and/or any specific recommendations for training on this task. Your comments may be written in any available space on the front or back of this page or on a separate sheet.

ADEQUACY OF SCHOOL TRAINING FOR THIS TASK

1. Task requires much more emphasis in school.
2. Training less than adequate for task; increase emphasis.
3. Training adequate for task.
4. Training more than adequate for task; reduce emphasis.
5. Greatly reduce or eliminate training for this task.

Nr.							
1	1.1.1	Bridge gaps	1	2	3	4	5
2	1.1.2	Reduce obstacles	1	2	3	4	5
3	1.1.3	Maintain lines of communication	1	2	3	4	5
4	1.1.4	Establish tactical landing zones	1	2	3	4	5
5	1.2.1	Plan obstacles	1	2	3	4	5
6	1.2.2	Employ minefields	1	2	3	4	5
7	1.2.3	Construct obstacles	1	2	3	4	5
8	1.3.1	Construct field fortifications	1	2	3	4	5
9	1.3.2	Apply countersurveillance measures	1	2	3	4	5
10	1.3.3	Mask unit movement	1	2	3	4	5
11	1.4.1	Construct base camp	1	2	3	4	5

PAGE: 2 of 2

Combat Engineer Officer Course

Listed below are tasks which presently receive at least some emphasis in school. Please rate each task on the scale at the right by circling the most appropriate number. Please feel free to also include your reasons for your rating and/or any specific recommendations for training on this task. Your comments may be written in any available space on the front or back of this page or on a separate sheet.

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3. Training adequate for task.
4. Training more than adequate for task; reduce emphasis.
5. Greatly reduce or eliminate training for this task.

Nr.							
12	1.4.2	Construct a concrete structure	1	2	3	4	5
13	1.4.3	Determine equipment technical publication requirements	1	2	3	4	5
14	1.4.4	Requisition repair parts	1	2	3	4	5
15	1.4.5	Complete equipment records	1	2	3	4	5
16	1.4.6	Complete input transactions	1	2	3	4	5
			1	2	3	4	5
			1	2	3	4	5
			1	2	3	4	5
			1	2	3	4	5
			1	2	3	4	5
			1	2	3	4	5

Although we have already asked you to consider existing school training in great detail, there is one more very important job you can do for us. We need to know what things presently are NOT taught in school but should be taught there. Consider things the trainee has had to learn on the job with much loss of time for both him and his supervisors. Also consider tasks he still cannot perform because he did not learn them in school and because it has not been possible to train him on the job. Please do this carefully and thoughtfully. As a supervisor of a recent school graduate, you are in a unique position to identify those things which are almost certain to be missing from school.

1. ____

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5. ____

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PLEASE FURNISH THE FOLLOWING INFORMATION ABOUT YOURSELF AND THE RECENT SCHOOL GRADUATE WHOM YOU SUPERVISE

1. Your Name ____________________ Rank ______ Today's date __________

2. Duty station ____

3. Name of recent school graduate ____________________

4. His rank ________

5. How many months has he been at his present duty station? ____________

6. Has he been assigned to duty within his job speciality? ______ If No, what is his assignment? ____

7. Did he attend any other school after completing Engineer School? ________

If Yes, which school? ______________________________________

8. Did other activities at this duty station delay the beginning of his work in his specialty? ________ If Yes, what activities? ____________________

How long was the delay? ____________

9. Check the following statement that best describes how much this man's Engineer School training is utilized in his present job?

______	______	______	______	______
VERY MUCH	MUCH	SOME	VERY LITTLE	NOT AT ALL

Student Post-Training Evaluation Forms

UNITED STATES MARINE CORPS
MARINE CORPS ENGINEER SCHOOL
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO
ACAD/GWK/
5700

From: Academic Department, Marine Corps Engineer School
To:

Subj: Field Evaluation of Marine Corps Engineer School Training

Encl: (1) Field Evaluation Materials

1. During one of your last classes in school the important task you can perform in the identification of training problems was discussed. At this time, we are asking you to aid us in this task since you have probably been on the job long enough to have developed a good understanding of your duties and the training needed to perform them.

2. The enclosed materials make it possible for you to indicate whether too much or too little emphasis was given to any of the various tasks covered in school. On the final page of this questionnaire we request that you indicate job tasks that are not presently covered in school, but which should be covered in the future. Throughout your completion of these materials we hope you will write down any thoughts you may have about training problems, recommendations for their solution, and any other aspects of school training.

3. Please return these materials in the enclosed envelope within two weeks, if possible. This information will aid us to provide better training in the future.

GARRY W. KNOWLTON
Education Specialist

INSTRUCTIONS FOR COMPLETING RATING SCALES

On the following pages tasks are listed which received at least some emphasis in school. Please rate each task on the two scales at the right of the task by circling the most appropriate number. On the "Frequency of Task" scale, select the category that corresponds most closely to the actual frequency with which this task is performed by you in your present assignment.

On the "Adequacy of School Training for This Task" scale, select the most appropriate of the following categories:

1. Task requires much more emphasis in school.
2. Training less than adequate for task, increase emphasis.
3. Training adequate for task.
4. Training more than adequate for task, reduce emphasis.
5. Greatly reduce or eliminate training for this task.

(You may skip this "Adequacy" rating for a particular task if that task is never performed and you do not feel you can rate adequacy of training for it.)

In making this rating consider such things as the following:

Problems you may have had performing this task when first required to do it;

The amount of time that was required by your supervisor or others at your unit to bring you "up-to-speed" on the task; whether, for some reason, the task should have been learned on-the-job instead of in school; and

Whether learning to perform this task in school does not help you in your present job or will not help you in the forseeable future.

Also consider that school training is expensive and must be used only for essential tasks. On the other hand, remember that operational units have many other functions to perform beside on-the-job training.

As you can see, the rating of training adequacy is not simple. We are asking you to do this since you hold two views of the world that are critical for judging the adequacy of training. One view is of school training as it exists for the student and the other view is of the requirements of your present job. These unique perspectives of yours make your careful ratings invaluable to us!

Page 1 of 2

Combat Engineer Officer Course

Listed below are tasks which presently receive at least some emphasis in school. Please rate each task on the scale at the right by circling the most appropriate number. Please feel free to also include your reasons for your rating and/or any specific recommendations for training on this task. Your comments may be written in any available space on the front or back of this page or on a separate sheet.

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Nr.							
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3	1.1.3	Maintain lines of communication	1	2	3	4	5
4	1.1.4	Establish tactical landing zones	1	2	3	4	5
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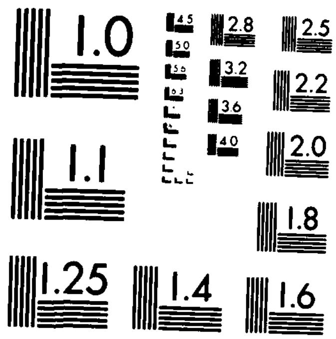
9	1.3.2	Apply countersurveillance measures	1	2	3	4	5
10	1.3.3	Mask unit movement	1	2	3	4	5
11	1.4.1	Construct base camp	1	2	3	4	5

AD-A147 260 AN EVALUATION OF THE EDUCATION AND TRAINING OF MARINE CORPS COMBAT ENGINEER OFFICERS(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH H MASHBURN SEP 84 3/5

UNCLASSIFIED AFIT/GEM/LSM/84S-13 F/G 5/9 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

PAGE: 2 of 2

Combat Engineer Officer Course

Listed below are tasks which presently receive at least some emphasis in school. Please rate each task on the scale at the right by circling the most appropriate number. Please feel free to also include your reasons for your rating and/or any specific recommendations for training on this task. Your comments may be written in any available space on the front or back of this page or on a separate sheet.

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Although we have already asked you to consider existing school training in great detail, there is one more very important job you can do for us. <u>We need to know what things presently are NOT taught in school but should be taught there</u>. Consider things you have had to learn on the job with much loss of time for both you and your supervisors. Also consider tasks you still cannot perform because you did not learn them in school and because it has not been possible to train you on the job. Please do this carefully and thoughtfully. As a school graduate working in the job you were trained to do, you are in a unique position to identify those things which are almost certain to be missing from school.

1. ____

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2. ____

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4. ____

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5. ____

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PLEASE FURNISH THE FOLLOWING INFORMATION

1. Name ______________________ Rank ______ SSN ____________

2. Today's date ______________

3. Present duty station ______________________

4. How many months have you been at your present duty station? ____________

5. Have you been assigned to duty within your job speciality? ______ If No, what is your assignment? ______________________

6. Did any activities at this duty station delay the beginning of work in your speciality? ______ If Yes, what activities? ______________________ ______________________ How long was the delay? ____________

7. Did you attend any other school after the Marine Corps Engineer School? ______ If Yes, which school? ______________________

8. Check the following statement that best describes how much of the training you received at the Marine Corps Engineer School is used in your present job.

______ VERY MUCH ______ MUCH ______ SOME ______ VERY LITTLE ______ NOT AT ALL

Appendix D: Subjects Taught at the Combat Engineer Officer Course Under the 1975 Program of Instruction (Source 15)

Engineer Equipment- Characteristics, employment, and maintenance of engineer equipment, water supply equipment, welding equipment, and field generators.

Field Construction- Construction of buildings, concrete construction, and erection of rigging devices.

Routes of Communication- Military bridge design, capabilities and erection procedures; road construction and maintenance; reconnaissance techniques; airfield and heliport construction; and the principles of soil engineering.

Management and Job Planning- Provides exposure to necessary general information required to manage an engineer platoon and specific management information and planning techniques which will enable a platoon leader to guide a platoon in performing a construction mission.

Demolitions- Safety precautions, calculations, proper handling, placement, priming, and firing of military explosives.

Landmine Warfare- U.S. and foreign mines and mine warfare doctrine; platoon employment in tasks involving mines and boobytraps.

Field Fortification and Camouflage- Construction of emplacements; shelters, and obstacles; principles and techniques of camouflage using proper camouflage materials.

Appendix E: Subjects Taught at the Combat Engineer Officer Course Under the 1983 Program of Instruction
(Adapted from 39:III-1,2)

Mobility. Instruction focuses on the engineer officer's responsibilities on the modern battlefield. The student is shown how he fits in as an integral part of combined arms. Each student will plan and execute to a successful conclusion a bridging operation. The student will also establish a tactical landing zone to support a MAU in an amphibious operation. Instruction prepares the student to use engineer assets to enhance combat power with work that is quick and expedient by clearing and maintaining lines of communication. Each student will also plan the reduction of a threat barrier system to include deployment and firing of the line charge.

Countermobility. Instruction prepares the student to use assets to stregthen weapon systems organic to the MAU and to reduce threat mobility and effectiveness. Focus is on obstacle employment during battle. Each student will plan and brief an obstacle system. The student will construct a standard pattern minefield as part of a team. Instruction will also be presented on FASCAM with a "how to" approach to employment of this family of scatterable mines.

Survivability. The focus of these classes is deception, countersurveillance and fortification. Instruction centers around the specialized equipment and expertise that the combat engineer can provide in assisting forward units. Each student will plan and construct a TSFC bunker. Additionally, the student will employ current screening systems.

General Engineering. Instruction centers around engineer skills that do not directly contribute to mobility, countermobility, or survivability. The emphasis of instruction is on construction skills. Each student will plan and site a base camp including the construction of a building. Additionally, each student will design and complete a concrete project.

Appendix F: Subjects Taught at the Amphibious Warfare Course (Adapted from 37:I-1 - I-4,III-1 - III-5)

Scope. The Amphibious Warfare Course is a career level school. The primary focus is operational, emphasizing the command and staff functions necessary to integrate all combat elements into an effective amphibious unit. In order to achieve this purpose the course provides a professional education in command and staff functioning, combined arms operations, and tactical decision making. Also essential to this education and ultimately the course's purpose are the development of the student's communication skills, leadership ability and a broadened awareness of world affairs.

The course of instruction is presented in an incremental manner using a building block approach. At the beginning of the course, students receive instruction in battalion/squadron/MSSG operations. From this point, the course progresses logically until its culmination with MAB level operations. Because MAGTF capabilities are relative to the threat, the students concurrently receive instruction in Soviet military organization, operation and tactics. These subjects are initially taught by lecture, but is is through practical application that the learning process is reinforced. The majority of the course is dedicated to this method of instruction, and it is the seminar or "workshop" concept that is used to facilitate this instruction.

The course relies on a variety of means of practical application. The Tactical Exercise Without Troops (TEWT) is conducted over a designated piece of ground for the purpose of promoting terrain analysis

in the tactical planning phase. The TEWT is often used in conjunction with the Battlefield Analysis Study. In this study, students walk the terrain of local Virginia battlefields and review the actions of previous military leaders. Upon completion of the study a TEWT is conducted over the same terrain using present day friendly and threat tactics and forces.

The Command Post Exercise (CPX) is perhaps the most valuable means of practical application utilized by the course. These exercises are conducted following an incremental period of instruction such as battalion tactics, regimental tactics, MAU operations and MAB operations. Scenarios for these exercises are based on existing real world situations, which also broaden the student's awareness of current affairs. While the CPX exercises the student's tactical and operational knowledge, it is the development of the student's tactical decision making ability which is its most important aspect. Fluid and uncertain situations repeatedly challenge the student's tactical judgment. Opposing student staffs seek to maneuver forces against each other while tactical exercise control groups mediate the exercise.

Battle Studies of 13 significant conflicts are used to provide historical perspective to the course's instruction. Extensive research is conducted by each seminar and then presented to the entire class. Conclusions are drawn and then compared to present day situations and capabilities.

The course relies on other means of practical application such as combined arms exercises, cold weather training at Bridgeport, California, wargaming, and is not limited to just those mentioned.

Finally, the course seeks to improve the specialist skills of each officer's MOS through the Occupational Field Expansion Course (OFEC). This training is conducted in three groups: Ground Combat Arms, Aviation and Combat Service Support. Assignment of students to specific OFEC groups is based on the student's MOS or in some cases the student's future assignment. Each OFEC is dynamic in nature and incorporates the most current subject material in its instruction.

Academic Subjects

Tactics. Instruction is designed to enable the student to

- plan and execute tactical maneuver with fire support in Marine combat operations that are essential to amphibious operations, and to apply the fundamentals, principles, techniques and tactics essential to the employment of a reinforced infantry battalion and reinforced infantry regiment operating over a range of conditions--conventional, arctic, desert, jungle, nuclear, chemical and biological.

- apply an understanding of unconventional operations (insurgency, counter-insurgency, paramilitary and terrorist).

Operations against the Threat (Soviet and Warsaw Pact Forces) are emphasized to include an understanding of Threat organization, equipment and tactics.

Operations. Instruction is designed to enable the student to:

- apply the fundamentals, principles, and techniques essential to the planning, coordinating, and training of amphibious operating forces, with emphasis at the MAU and MAB levels, for service with the fleet in the seizure of advance naval bases.

- apply the fundamentals, principles and techniques for the coordinated tactical employment of combined arms, including electronic warfare, in Marine air-ground operations.

- understand the characteristics, capabilities, and limitations of friendly weapons systems.

- understand the employment considerations of nuclear and chemical weapons.

- know the special considerations, techniques, and equipment that promote survivability, mobility and operational effectiveness in nuclear and chemical environments.

- apply the fundamentals, principles and techniques for planning and executing combat service support in amphibious operations.

Command and Management. Instruction is designed to enable the student to apply an understanding of

- G/S-1 functions, personnel management, organization, and internal operation of headquarters.

- G/S-2 functions, intelligence matters pertaining to the enemy, the area of operation and other militarily significant information.

- G/S-3 functions, operations and training matters essential to tactical operations.

- G/S-4 functions and combat service support matters pertaining to supply, evacuation, transportation, service, maintenance, budgeting and financial management.

- techniques and principles for operational planning and tactical employment of command, control, and communications elements in Marine air-ground operations.

- the functions of systems management including the policies, principles, and procedures used in the application of automated data processing in the fields of training, readiness reporting, operational command and control, maintenance, personnel, supply/combat service support, and financial.

- the principles and process of military law.

- staff functions at the battalion/squadron/MAU and the regiment/group/MAB levels.

- the techniques and procedures of command and staff planning action.

- the command relationships at the MAU, MAB and higher leve commands.

- joint command relationships and the Joint Operation Planning System.

- the missions, capabilities, and limitations of the operating forces and the supporting establishment with the Marine Corps Reserve as part of the Total Force.

- the organization and operation of Headquarters, U.S. Marine Corps, and its relationship with the Department of Defense, Joint Chiefs of Staff, and the Departments of the Navy, Army, and Air Force.

Additionally, to enable the student to

- apply an understanding of the fundamentals and techniques of effective communications.

- listen, read, think, write, and speak at a higher level of achievement.

- apply an understanding of the techniques of formal and informal problem solving.

- understand aspects important to the professional education of a Marine officer, including the contemporary factors involving national security; politico-military, and geopolitical significance, military and naval history; the impact of national, sociological, technological and economic developments on the military profession.

- apply an understanding of the aspects of leadership.

- apply an understanding of physical readiness through participation in a program of combat conditioning emphasizing development of strength, stamina, and optimum weight distribution.

- understand the Commandant's policies related to abuse of drugs and alcohol by Marines.

<u>Battle Studies</u>. Instruction is designed to enhance the student's tactical decision making ability by providing the student with an opportunity to conduct a detailed historical analysis of 13 significant campaigns and battles. These battles have been selected for their relevance to modern day warfare and for the reinforcement of current tactics instruction. This instruction will specifically enable the student to:

- understand the factors which influence tactical decisions made during these battles.

- analyze the impact of these tactical decisions on the conduct of the battle.

- seek historical precedents which have bearing on today's warfare.

- conduct a comparative analysis between past and present tactics.

- evaluate the effect of technological advances on the conduct of war.

- attempt to understand the battlefield consciousness of successful military leaders.

Occupational Field Expansion Course. Instruction in this subject area is designed to enhance career development by enabling the student to obtain currency, knowledge or professional skills equivalent to that produced by duty experience in a given MOS or occupational field and, to pursue interests in fields or endeavors related to the military profession in general.

Enrichment Lectures. Instruction consists of a series of lectures in various subject areas by noted speakers in that field. Students are exposed to a variety of thoughts and ideas which will expand their knowledge of the defense establishment.

Special Instruction for Foreign Military Officers. This instruction familiarizes the Foreign Military Officer students with the historical, social and military aspects of the United States.

Appendix G: Task Inventory—Amphibious Warfare Course
(Adapted from 37:VI-1 - VI-5)

Duty: Prepare plans, orders and directives.

Tasks: Write a tactical deception plan.

Identify terrain features on a military map.

Write a battalion operation plan for an offensive mission.

Write a battalion operation plan for a defensive mission.

Write a regimental obstacle plan.

Write a battalion counterattack plan.

Write a mechanized attack plan.

Write an anti-mechanized plan.

Write a night operation plan.

Write a plan for an infantry battalion's unassisted breakout from encirclement.

Write a retrograde operation plan.

Write a relief operation plan.

Prepare a plan for military operations in an urbanized terrain.

Write an operation plan for jungle operations.

Prepare an operation plan for cold weather operations.

Prepare a scheme of maneuver for exploitation and pursuit.

Write a river crossing plan.

Prepare a linkup annex to an operation order.

Prepare a battalion/squadron-sized unit plan for air movement.

Construct a plan for the operation of the combat service support control agencies.

Write a task organization for a BSSG.

Prepare a plan for the employment of Marine aerial reconnaissance units.

Write a plan to provide assault support to MAGTF.

Prepare a helicopterborne operation plan.

Write a plan for the control of tactical air in an amphibious operation.

Prepare a fixed wing aircraft schedule.

Prepare the offensive air support portion of an air tasking order.

Prepare the antiair warfare portion of an air tasking order.

Write a regimental attack order.

Write an infantry battalion fire support plan for an offensive operation.

Prepare a fire support plan for an infantry battalion in the defense.

Prepare a plan to employ an artillery battalion in support of an infantry regiment.

Write an intelligence estimate for a regimental commander.

Write a personnel and logistics estimate for a regimental commander.

Write a regimental task organization annex for an attack order.

Duty: Coordinate and direct the employment of organic and supporting arms.

Tasks: Direct a battalion fire support coordination center.

Describe the role of artillery in combined arms operations with a maneuver infantry battalion.

Determine the role of close air support in combined arms operations with a maneuver infantry battalion.

Explain the six functions of Marine aviation.

State the employment considerations of the FAAD battery.

State the concept of passive anti-air warfare.

Direct the employment of aircraft in offensive air operations during wargame "FAST STICK."

Direct the employment of aircraft in anti-air warfare operations during wargame "FAST STICK."

Describe the various elements of the MACCS.

Select the elements of aviation electronics.warfare.

Task organize an aviation combat element.

Identify the various considerations of anti-air warfare.

Duty: Organize and direct a MAGTF Staff.

Tasks: Coordinate a military staff organization and its functioning.

Coordinate an infantry battalion combat operations center.

Manage the staff sections in an infantry battalion.

Supervise the operation of a battalion command post.

Coordinate an infantry battalion staff in command post operations.

Duty: Practice personal oral and writing communication techniques.

Tasks: Analyze selected books for professional enhancement.

Present a period of military instruction.

List the principles involved in effective listening.

List the principles involved for effective speaking in oral communications.

Conduct a small training conference.

Prepare a military briefing.

Present a persuasive speech.

Select the appropriate military communication format to verbally communicate with an outside agency.

Duty: Plan amphibious operations.

Tasks: Select a landing beach for an amphibious operation.

Prepare a landing plan.

Write an amphibious raid plan for a Marine Amphibious Unit.

Select the role of naval gunfire in amphibious operations.

Determine the role of artillery in an amphibious operation.

Write the eleven decision making points in amphibious staff planning.

State the principles of amphibious planning according to current doctrine.

Duty: Plan and coordinate CSS support for an operation.

Tasks: Identify the CSS capabilities of the Force Service Support Group.

Identify the CSS capabilities of the Marine Division.

Identify the CSS capabilities of the Marine Aircraft Wing.

Select the strategic transportation requirements for a MAGTF.

Identify the tactical transportation requirements for a MAGTF.

Write a casualty estimate for regimental amphibious operation.

Prepare a task organization of a landing force support party to support a regimental MAGTF in an amphibious operation.

Prepare a plan for the employment of an engineer unit in support of a regimental MAGTF in an amphibious operation.

Write a medical annex for an operation order.

List the unique medical hazards when planning for combat in extreme environments.

Compute supply requirements for a MAGTF.

Duty: Plan and direct the employment of communications assets of a MAGTF.

Tasks: Prepare a plan to support the tactical communications of an infantry battalion.

Write the communications annex to support an operation plan for an infantry battalion.

Identify the requirements for secure tactical communications utilized by battalion sized units.

Supervise the displacement of the communications assets of an infantry battalion command post.

Duty: Direct and demonstrate ability to survive in hostile environment.

Tasks: Demonstrate survival techniques in a simulated NBC environment.

Direct a tactical command post exercise in a simulated NBC environment.

Conduct cold weather operation.

Duty: Provide information and develop recommendations.

Tasks: Select the principles which govern the law of land warfare.

Identify the considerations of unit training management programs.

State the role of U.S. forces in joint/combined operations.

Appendix H: Courses Taught at the Engineer Officer Advanced Course
(Adapted from 8:iv-xvi)

Management and Leadership

Training Management

Introduction to Training Management
Company Training Management
Battalion Training Management

Leadership and Organizational Effectiveness

Counseling - Personality and Need Theory
Drug and Alcohol Abuse
Race Relations/Equal Opportunity
Counseling - Techniques and Practice
Ethics Workshop
Group Behavior and Leadership Seminar
Introduction to Organizational Effectiveness

Personnel Management

Officer Efficiency Reports
Unit Administration
Standard Installation/Division Personnel System (SIDPERS)
Enlisted Personnel Management System (EPMS)
Enlisted Evaluation System
Files and Records Management

Military Justice

Search and Seizure
Warning Requirements
Disciplinary Actions
Article 15
Inspect Disciplinary Documents
Article 32 Investigations
Administrative Discharges
Military Justice Examination

Introduction to Combat Engineering

Automated Data Processing Systems (ADPS)

Survey of Automatic Data Processing
Computer Syntax I
The Central Processing Unit and the Stored Program Concept
Computer Syntax II
Input/Output Media and Devices

Computer Syntax III
Military Applications of ADPS
Computer Syntax IV
Operating Systems
Computer Systems Management
ADPS Examination
Computer Syntax V
Syntax Examination

<u>Unit Management</u>

<u>Military Writing</u>

Effective Writing - Part I
Effective Writing - Part II
Effective Writing - Part III
Effective Writing - Part IV
The Staff Study

<u>Unit Dining Facility Operations</u>

<u>Supply Management</u>

Supply Sources and Procedures
Accountability and Responsibility
Repair Parts Management
Supply Adjustment Transactions
Unit Ammunition Procedures
Supply Management Practical Applications

<u>Combat Service Support</u>

Combat Service Support I
Combat Service Support II
Combat Service Support III
Combat Service Support IV

<u>Maintenance Management</u>

Maintenance Management Application
Maintenance Management Examination

<u>Nuclear, Biological, and Chemical Warfare</u>

Effects of NBC Weapons
Residual Radiation
Operations in a Toxic Environment

<u>Tactical Communications</u>

Effective Use of Tactical Communications Equipment and Systems
Division/Area Communications Systems
Electronic Warfare/Communication Security - Part I

Electronic Warfare/Communications Security - Part II
Tactical Communications Exam

Unit Status Report

Engineers in Tactical Operations

Terrain Evaluation

Introduction to Military Geographic Information
Fundamentals of Remote Sensing Imagery: Basic Concepts
Fundamentals of Remote Sensing Imagery: Stereoscopy
Fundamentals of Remote Sensing Imagery: Height and Intervisibility
Determinations
MGI Examination

Geology

Rock Properties
Structural Geology
Weathering, Mass Movement and Terrain Elements
Residual Landforms
Fluvial and Coastal Landforms
Glacial and Eolian Landforms
Ground Water Geology
Terrain Appreciation
Geology Exam

Combat Intelligence

Safeguard Defense Information
Combat Intelligence/STANO Systems
NBC Employment Concepts on the Integrated Battlefield
The USSR and the US: Relations Past and Future
Red China and the US: Relations Past and Future
OPFOR
Soviet Army Engineer Units
Soviet Mine/countermine Doctrine and Hardware

Staff I

Organization of the Army Division
Staff Organization and Functions
Graphics
Tactical Estimate
Tactical OPORD

Allied Engineer Units

Organization and Equipment of Allied Engineer Units (France)
Organization and Equipment of Allied Engineer Units (Germany)

Organization and Equipment of Allied Engineer Units (United Kingdom)
Organization and Equipment of Allied Engineer Units (Australia)
Organization and Equipment of Allied Engineer Units (Canada)

Staff II

Camouflage
Smoke Operations
Tactical Air Control System
Division Field and Air Defense Artilleries
Basic Combat Engineering Qualification Examination

Defense Operations

Tactical Operations

Engineer Employment as Mechanized Infantry
Direct and Indirect Weapons Employment
Introduction to Defensive Tactical Doctrine
Division Defensive Exercise
Armored/Mechanized Infantry Company Team Tactics
Retrograde Operations
Introduction to DUNN-KEMPF Wargaming
Light Infantry Company Tactics
Organization of the Defensive Area
Company Defensive Tactics
Examination

Engineers in the Defense

Combat Engineer Units
Principles of Engineer Employment
The Engineer Staff Estimate, Orders, and Annexes
Engineers in the Defense
Introduction to Obstacles
Conventional Mine Operations
Dynamic Mine Operations
Capabilities of ADM Systems
Conduct of ADM Missions
Obstacle Planning
Strongpoint and Military Operations in Urbanized Terrain (MOUT)
Obstacle Design Exam

Engineer Defensive Operations

Engineer Defense PE 1, Terrain/Obstacle Analysis
Engineer Defense PE 2, Mobility, Survivability, and General Engineering Analysis
Engineer Defense PE 3, Engineer Annex
Engineer Defense PE 4, Obstacle Annex
Engineer Defense PE 5, Engineer OPLAN

Engineers in the Retrograde
DUNN-KEMPF II Obstacles
Engineer Defense Operations
Examination

Offensive Operations

Offensive Tactical Doctrine
Movement to Contact/Hasty Attack
Deliberate Attack
Engineers in the Offense
Minefield Breaching and Clearing
Counterbarrier, Flame and Demolitions
Engineers in the Movement to Contact and Hasty Attack
Offense Examination

Engineers in River Crossing Operations

River Crossing Operations
Fords and Amphibious Crossing Sites
Ribbon Bridge Equipment
Divisional River Crossing Planning
Rafting Operations
River Crossing PE Part I, Terrain Evaluation
River Crossing PE Part II, Division Planning
River Crossing PE Part III, Brigade Planning
Assault River Crossing
Historical Evaluation
River Crossing Examination

Military Standard Fixed Bridges

Military Non-Standard Fixed Bridges

Military Non-Standard Fixed Bridges
Fixed Bridge Superstructure I, II, III
Fixed Bridge Abutments I
Fixed Bridge Superstructure Graded PE
Fixed Bridge Abutments II
Fixed Bridge Piles I
Fixed Bridge Abutment Graded PE
Fixed Bridge Piles II
Bixed Bridge Piles III
Fixed Bridge and Bunker Analysis
Fixed Bridge Piles Graded PE
Fixed Bridge Reinforcement and Repair
Fixed Bridges Examination

Engineers in Combat PE - Operation WINDUP

Tactical Motor March
Defensive Planning
Retrograde Planning

Defense Examination
Deliberate Attack and River Crossing
Movement to Contact Planning
Offense Examination

<u>Organization and Functions of the Corps of Engineers</u>

Organization and Functions of the Corps of Engineers
Engineer Economics - Part I
The National Environmental Crisis
Work Generation and Management
US Environmental Quality Laws and Protective Directives
Engineer Economics Part II
Master Planning/Master Planning Estimating
Project Justification
Real Property Facilities Projects
Energy Management
Troop Construction Projects
Environmental Impact Statement
Principles of Cost Accounting Fund Control
Disaster Recovery Operations
Corps of Engineers Functions Examination

<u>Construction Management</u>

Preliminary Planning for an Engineer Project
Engineer Project Planning
Resource Estimating
Schedule Development
Engineer Management Graded PE I
Resource Constraining, Early Start Schedule and Updating the Logic Network
Project Expediting
Project Control I
Project Control II
Army Facilities Component System
Project Scheduling for a Battalion-Sized Mission
Engineer Management Graded PE II

<u>Soils</u>

Basic Soil Properties
Unified Soil Classification System and Field Identification of Soils
Theory of Compaction
California Bearing Ratio I
California Bearing Ratio II
Field Density
Soils Stabilization
Soils Exploration
Soils Utilization Examination

Drainage

Delineation of Drainage Areas
Rational Method of Runoff Determination
Successive Areas Runoff Determination
Open Channel Determination
Drainage Structures
Erosion Control
Drainage Examination

Roads and Airfields

Military Roads in the T/O
Horizontal Alignment
Vertical Alignment of Roads in the T/O
Construction of the Mass Diagram
Military Airfields in the T/O
Vertical Alignment of Airfields
Expedient Airfield Surfaces
Roads and Airfields Examination

Equipment Utilization

Utilization of Earthworking Equipment
Earthmoving Equipment Production Estimation
Utilization of Compaction Equipment
Utilization of Lifting and Loading Equipment
Production Estimation for Lifting and Loading Equipment
Construction Equipment PE
Earthworking Equipment Examination

Quarry-Crusher Operations

Quarry Site Selection
Terrain Evaluation for Site Selection
Utilization of Quarrying and Rock Crushing Equipment
Production Estimation - Quarry and Rock Crushing Equipment
Rock Blasting
Quarry Development
Quarry Development Exercise
Quarry Examination

Flexible Pavement Structures

Airfield Flexible Pavements
Highway Flexible Pavements
Frost Design Analysis
Airfields and Heliports
Roads
Operation Mini-Road
Flexible Pavements Examination
Bituminous Materials
Bituminous Treatments and Pavements

Bituminous Construction Practices
Bituminous Paving Equipment
Bituminous Hot Plant Mix Determination
Asphalt Plant Equipment
Bituminous Maintenance
Bituminous Examination

Concrete

Concrete Fundamentals and Mix Proportions
Reinforced Concrete Construction
Horizontal Concrete Construction
Formwork for Concrete
Utilization of Concrete Processing Equipment
Quality Control of Concrete Construction
Concrete Examination

Theater of Operations Building Construction

Introduction to T/O Structures
Wood Frame Structures
Prefabricated Metal Structures
Layout of a Troop Camp
Examination

POL Systems in the Theater of Operations

Military Pipeline Systems
Analysis of Military Pipeline Systems
Military Pipeline Systems Examination

Theater of Operations Water, Plumbing and Sewage Systems

Water Systems
Water Systems Analysis
Military Plumbing Systems
Sewerage Systems
Sewerage Systems Analysis
Utilities Examination

Theater of Operations Electrical Utility Systems

Military Electrical Systems
Interior Lighting Design
Interior Electrical Systems Analysis
Exterior Electrical Systems
Exterior Electrical Systems Analysis
Examination

Engineers in Construction Support PE - Operation BUILDER

Professional Development Briefings

- Base Development Planning I
- Topographic Role of the Corps of Engineers
- Engineer School Field Support
- Officer Career Management
- Role and Mission of the Inspector General
- Civil Disturbance Operations
- Naval Construction Forces
- Amphibious Warfare Study

Guest Speakers

- Contemporary Military Affairs
- Military Character and Leadership
- Open Forum with the Chief of Engineers

Combat Training Developments

- Developments in Demolitions and in Mine/Countermine Operations
- Engineer Combat Developments/Training Developments Activities

Appendix I: Task Inventory of the Proposed Program of Instruction of the Engineer Officer Advanced Course
(Adapted from 9:75-105)

Approved Tasks Selected for Resident Training

Proponent

Estimate project duration
Prepare an early start schedule
Revise an early start schedule
Conduct construction site inspection
Analyze detailed construction plans
Prepare a critical path network
Prepare quality control plan
Review and analyze quality control test results
Prepare construction status reports
Advise superiors and staff on engineer construction matters
Plan and supervise employment of FASCAM mines
Supervise deliberate minefield breach and clearing operations
Supervise installation of deliberate minefield
Supervise installation of tactical minefield
Plan the installation of minefields
Prepare nonnuclear target folders
Supervise employment of reserve firing procedures
Enforce explosive and demolition safety requirements
Prepare unit obstacle plans
Plan and supervise construction of reinforcing obstacles using engineer equipment
Coordinate with other combat arms for best use of terrain
Plan collection of engineer information
Process intelligence information
Prepare intelligence estimates
Conduct engineer reconnaissance missions
Insure map availability
Plan and conduct engineer support for the assault phase of a river crossing operation
Design a fixed span bridge
Plan traffic control at crossing sites
Coordinate bridging operations with supported units
Establish and supervise operation of an engineer regulating point (ERP)
Plan and supervise preparation of a river crossing site
Design anchorage system
Plan and supervise preparation of a swim site
Plan and conduct pneumatic assault boat crossing
Plan and conduct rafting operations
Plan and conduct float bridging operations

Plan and supervise deployment of project equipment
Plan and supervise clearing and grubbing of project site
Plan and supervise fill operations
Plan and supervise backfill and compaction operations
Plan and supervise soil stabilization operations
Plan and supervise excavation of foundations
Plan provisions for site drainage
Design culverts
Plan and supervise maintenance of dirt roads
Prepare base for bituminous wearing surface
Design and apply bituminous mixes
Maintain bituminous wearing surfaces
Plan and supervise borrow operations
Conduct rock excavation operations
Prepare quarry operations plan
Select quarry site
Develop new quarry site
Determine and exercise quality control measures for quarry crusher operations
Plan and supervise quality control testing of concrete
Identify and delineate drainage areas
Design open channels
Estimate quantity of surface runoff
Estimate surface runoff through successive drainage areas
Select erosion control structures
Design a military road
Design Theater of Operations (T/O) road geometrics
Prepare mass diagram
Design a flexible pavement structure
Design a rigid pavement structure
Establish orientation and geometrics of T/O airport and heliport facility
Perform rapid runway repair
Construct a forward tactical landing strip
Design and construct an earth embankment
Determine soil trafficability
Supervise soils analysts
Compute concrete mix design for given strength requirements
Design concrete formwork
Read and interpret plans and specifications
Plan and supervise pile driving operations
Plan and supervise construction of a four pile bent
Plan construction of T/O buildings
Plan and supervise construction of a concrete pad
Plan and supervise construction of a concrete arch bunker
Plan and supervise installation of an overhead electrical distribution system
Lay out a troop camp
Design a sewerage system
Advise on pipeline matters, including requirements and capabilities of engineer pipeline units and equipment

Coordinate POL construction operations
Plan and supervise repair of existing railroad systems
Plan and control unit convoy movements
Analyze terrain in unit's area of operations

Common and Shared

Determine intelligence production requirements (IPR) and essential elements of information (EEI)
Prepare combat intelligence collection plans
Evaluate intelligence reports and disseminate information to appropriate levels
Assess enemy capabilities and operations and prepare combat intelligence estimates
Perform operational intelligence functions in Tactical Operations Center or Command Post
Coordinate POW interrogation
Advise superior and others on counterintelligence and security
Prepare CI policy directives and SOP
Establish and update files related to individual clearance and access lists
Process personnel security clearances
Inspect and evaluate facilities and activities for counter-intelligence security
Determine maintenance requirements, capabilities and authorizations
Coordinate maintenance operations with staff and higher or lower supporting organizations
Evaluate maintenance performance
Classify equipment and designate repair
Advise commander and others concerning maintenance operations
Provide guidance as to priorities for maintenance operations
Schedule application of modification work orders
Establish system of reports and controls on maintenance support operations
Take trouble-shooting action to resolve problems and expediate maintenance operations
Collect and disseminate technical information on maintenance activities
Provide/arrange for technical assistance to supported units
Review and forward unit readiness reports
Coordinate public information requirements and activities of own/subordinate echelons
Prepare or arrange news items on individual personnel for their hometown newspaper, television, and radio stations
Prepare and review news releases on organizational activities
Prepare plans and programs for command and/or troop information publications and activities
Make recommendations to commander regarding local information program
Finalize command or troop information publications

Provide for special handling, tagging, and security of classified items
Coordinate parts supply matters with parts supply, users, and other elements
Review incoming correspondence/messages and routing action/ information
Administer unit awards/recognition program
Supervise uhit postal operations
Administer unit safety program
Plan command information program (newsletter)
Coordinate unit plans and operations
Establish/displace command post
Study map/photo of area of employment and perform physical reconnaissance
Plan and control employment of attached engineer elements
Prepare mobilization plans
Execute mobilization plans
Coordinate mobilization plans
Supervise organizational maintenance (PM) program on unit equipment
Conduct maintenance inspection
Prepare Material Readiness Report (DA Form 2406)
Supervise preparation and maintenance of unit supply records
Inspect storage of unit supplies, equipment and weapons
Conduct inventories of supplies and equipment
Review adjustment documents/statement of charges/cash collection vouchers, inventory adjustments, reports of survey, and government property lost or damaged reports
Supervise maintenance of unit Prescribed Load List (PLL)
Plan for field services support requirements
Forecast ammunition requirements
Develop or revise storage plan for unit ammunition basic load
Inspect ammunition for compliance with storage, safety and security regulations
Account for unit ammunition
Supervise receipt of unit ammunition
Supervise turn-in of ammunition
Plan for transportation of unit ammunition
Direct dining facilities operations
Direct field mess operations
Supervise training and licensing of unit equipment operators
Direct unit bulk petroleum (fuel) operations
Direct unit packaged petroleum, oil, and lubricants
Develop and update movement plans
Plan motor movement (convoy) operations
Supervise unit movement operations
Develop unit crime prevention program
Administer unit crime prevention program
Prepare/administer physical security program
Prepare unit training plan
Conduct unit training

Arrange for reproduction and distribution of troop information publications
Prepare studies, reports, records and correspondence pertaining to logistics
Analyze requirements for and availability of future logistical resources
Coordinate activities of staff agencies having logistics support responsibilities
Determine transportation requirements
Plan and coordinate use of intra-unit transportation
Evaluate intra-unit transportation performance
Coordinate transportation matters
Coordinate logistics support with civil authorities
Exercise operational control over organization's motor vehicle maintenance element
Monitor requisition, receipt, storage, safety and issue of automotive parts and POL
Establish and coordinate use of motor pool facility
Plan and coordinate motor maintenance programs and schedules
Conduct inspections pertaining to motor vehicle maintenance and readiness
Determine vehicle requirements for motor movements
Coordinate supply matters within staff and higher or lower supporting organizations
Prepare studies, reports, and correspondence pertaining to supply
Plan and coordinate establishemnt and operation of supply, storage and distribution facilities
Determine supply authorization, availabilities and requirements
Allocate controlled supplies
Coordinate with U.S. Postal Service regarding mail and related activities in U.S.
Advise commander, staff, and supported units on postal affairs
Organize and control internal mail collection and distribution services
Establish and operate locator services
Operate overseas military postal receipt, delivery, and collection facilities
Inspect unit mail rooms
Investigate postal irregularities
Conduct or verify inventory and accounting for accountable mail
Prepare and review records, reports, correspondence, and memoranda pertaining to postal services
Establish working reference library
Organize personnel and facilities for efficient parts storage and maintenance management
Establish working reference publications files/supply of forms
Establish ASL or PLL and effect changes on basis of demand experience

Evaluate unit training
Plan for and conduct physical conditioning program
Monitor subordinate unit operations and movement
Supervise organic medical personnel
Prepare rater/indorser section of Senior Enlisted Evaluation Report (SEER)
Review SEER
Prepare Officer Evaluation (DA Form 67-8)
Recommend enlisted MOS action
Approve/disapprove or recommend approval/disapproval of personnel actions
Withdraw/recommend withdrawal of discretionary benefit (non-punitive administrative measures)
Administer semi-centralized promotion system/DA E-1 to E-4 Advancement Program
Initiate/remove report of suspension of favorable personnel action
Conduct unit reenlistment program
Counsel personnel on personal problems
Assist in resolution of military pay problems
Prepare and present strength status data and loss estimates
Review Sidpers performance letters to determine unit strength accounting efficiency
Prepare/evaluate personnel estimate
Evaluate personnel daily summary
Evaluate periodic personnel report
Determine/evaluate non-deployable personnel in unit
Administer DA Sole Parents Program/Army Married Couples Program
Draft/review military correspondence
Review and release joint message (DD Form 173)
Review/inspect functional files
Receipt for control classified materials
Supervise maintenance of unit journal
Write staff paper
Prepare staff paper
Prepare manpower survey report
Prepare report of board proceedings
Arrange evacuation of deceased personnel and/or their personal effects
Prepare unit operations plan/order/annex
Prepare unit operations estimates
Supervise maintenance of situation map
Analyze and evaluate terrain using a map
Plan command post security
Develop estimate of the situation
Conduct reconnaissance patrols
Supervise processing of enemy POWs at unit level
Plan for unit tactical road march
Conduct nit tactical road march
Plan for unit hasty attack
Plan for unit hasty attack

Plan for recon patrol
Direct preparation of defense against nuclear, biological, and chemical attack
Supervise operations in chemically/biologically contaminated areas
Plan for observation posts during tactical operations
Plan for rear area security operations
Conduct rear area security operations
Supervise use of organic radio equipment
Supervise use of organic wire equipment
Enforce communication security
Determine required supply rate of ammunition
Prepare unit readiness report
Study map/photo of area of employment and perform physical reconaissance
Prepare unit operations estimate
Prepare court-martial charge sheet (DD Form 4581)
Manage time effectively
Write effectively
Read quickly and comprehend material
Manage resources to accomplish mission
Advise and assist commander on elimination actions
Control OER/SEER administration
Maintain cargo/equipment accountability during movement
Implement casualty reporting system
Coordinate graves registration operations
Apply a leadership style based on the situation
Develop teamwork

Other Tasks and Subjects Taught in Resident Training

Leadership and Ethics

Professional Ethics
- Discuss the values of the Profession of Arms
- Apply the ethical decision making process
- Discuss the relationship between military professional ethics and leadership
- Discuss legitimate dissent
- Prescribe action to improve the ethical climate of a unit
- Discuss individual responsibility in war

Leadership Doctrine and Theory
- Describe leadership and how its application is influenced by the situation
- Apply leadership strategy appropriate to the situation

Communication
- Communicate effectively as a leader

Counseling
- Demonstrate how counseling contributes to individual and unit performance

Assume the role of a teacher/coach in leadership counseling

Supervision

Clarify the roles, responsibilities, and relationships of superiors, peers, and subordinates

Develop a plan for assuming a leadership position

Employ tools of administrative action

Maximize the effect of the chain of command

Train and evaluate subordinate leaders on techniques to inspect personnel and equipment to standard

Identify and apply special leadership considerations on the battlefield

Planning

Demonstrate ability to use the planning sequence to support the decision-making process

Decision Making

Demonstrate the ability to utilize the decision-making process

Management

Demonstrate a basic understanding in the practical use of management tools

Soldier/Team Development

Describe how individual values, needs, and attitude affect behavior

Apply motivational techniques

Describe the mission/purpose of the organization

Influence people in the organization to perform the mission

Develop subordinate leaders

Develop and sustain a cohesive team

Training Management

Comprehend the fundamentals of Army training

Understand performance-oriented training

Understand long-range planning

Understand short-range planning

Force Integration

Understand the Army life cycle management system as it relates to personnel, equipment and organization

Military Justice

Comprehend the primary functions of the military justice system

Military History

Understand the Army's past in sufficient depth to avoid generalizations and stereotypes, assist in understanding

the roots of various aspects of the military profession, and comprehend a sense of corporativeness, continuity and esprit in the Army

Hague/Geneva Convention: Code of Conduct

Understand the parameters of concept of war as stated in AR 350-216
Comprehend the intent of the U.S. Code of Conduct as stated in AR 350-30

Physical Fitness

Describe the concept of total fitness

Army Standardization Program

Understand the purpose and functions of the Army standardization program

Written and Oral Communications

Apply the principles of good writing
Solve communications problems
Apply the rules for preparation of oral materials

Combined Arms

Comprehend the Principles of War
Comprehend the Airland Battle Doctrine
Understand the organization, capabilities, and limitations of U.S. heavy divisions (FM 71-100)
Understand the organization, capabilities, and limitations of U.S. light divisions (FM 71-101)
Identify the key principles in the organization of major types of staffs in the U.S. Armed Forces
Identify the functions of COSCOM, Division, Installation, Brigade and Battalion staffs
Describe the military decision-making process
Describe the basic estimate of the situation
Describe division command and control during tactical operations
Depict military symbols and graphics
Perform mission analysis
Identify the operations estimate and the tactical commander's estimate
Describe the Intelligence Estimate
Describe the Personnel Estimate
Describe the logistics Estimate
Describe the Civil-Military Operations Estimate
Describe the various kinds of combat plans and orders available to the commander
Describe the Administrative/Logistics Plan or Order and the Operation Plan or Order

Identify the selected annexes and appendices to plans and orders
Describe the capabilities, limitations, and employment principles of the division communications system
Understand the concept of Command, Control and Communications Countermeasures
Describe the current process for the production of tactical intelligence at division level
Plan the integration of electronic warfare into the division tactical plan
Understand the employment of divisional air defense units
Explain how OPSEC helps the commander project his combat power
List the advantages and disadvantages of operations during obscured battlefield conditions
List the three primary night operations
Identify fundamentals of obscured battlefield conditions
Analyze the terrain along avenues of approach
Analyze the effects of weather on an avenue of approach
Identify and describe the ways, means, and best locations of terrain enhancements/impediments to tactical operations
Describe the origins and nature of the Warsaw Pact
Describe the training and traits of the Soviet soldier
Describe the organization, weapons, and equipment of Soviet combat and combat support units from company level up to army level
Describe the missions and capabilities of Soviet Army units
Describe Soviet military doctrine and tactics from squad to front level
Describe Soviet artillery organization and employment
Describe Soviet tactical air support organization and capabilities
Describe the organization and capabilities of Soviet helicopters
Describe the characteristics of Soviet airmobile operations
Identify possible vulnerabilities and weaknesses in the Soviet ability to wage war
Identify the purposes and fundamentals of the offense
Describe the operational concepts of the attack
Describe the types of offensive operations
Explain the concept of extending the battlefield within the context of the AirLand Battle operational doctrine
Describe defensive doctrine in the AirLand Battle
Describe the application of the AirLand Battle doctrine of defensive tactics
List the different types of retrograde operations
Define the different types of retrograde operations
Identify the fundamentals of planning and conducting retrograde operations
Describe the employment of the corps' armored cavalry regiment and divisional cavalry squadrons
Understand the fundamentals of planning and conducting RAP operations

Describe the capabilities, limitations, and principles of organization for combat for U.S. Army Field Artillery
Describe capabilities, limitations, and principles of organization for combat for mortars
Describe fire support planning and coordination
Describe, in general terms, how a request for preplanned tactical air support is forwarded from a battalion level originator
Match USAF aircraft to selected USAF functions
Match USAF munitions to the best target for that type of munition
Describe, in general terms, the types of offensive air support to include close air support, battlefield air interdiction, air interdiction, and tactical air reconnaissance
Describe U.S. national policy as it relates to nuclear, chemical, and biological weapons
Describe Soviet/Warsaw Pact NBC and smoke doctrine and capabilities
Describe U.S./NATO chemical and nuclear weapons employment concepts and capabilities
Describe the operation of the NBC warning and reporting system
Describe the U.S. Army operational concept for individual and collective NBC defensive measures on the AirLand Battlefield
Conduct a nuclear or chemical vulnerability analysis
Understand the integration and exploitation of friendly nuclear and retaliatory chemical weapons
Know the fundamentals of engineer support of combat operations
Describe the role of Army aviation in combat operations
Know the role of military police in combat operations
Describe the Army's "How-to-Support" doctrine
Describe the organization of the logistical system for the Army-in-the-field, from company team to theater Army level, focusing on divisions and below
Describe by function, the operation of the logistics system which supports the Army-in-the-field, with emphasis on division level and below

Supplemental Leadership Process Skills

Analyze an ethical problem
Evaluate ethical decisions
Apply speed reading techniques
Seek information
Determine success/failure of actions
Conduct leadership assessment of unit
Accept risks/legitimatize risk taking
Conduct a briefing
Manage change
Manage stress
Manage panic and fear
Perform effective listening

Provide/analyze feedback
Analyze information
Identify personal character traits of a leader
Apply "Be-Know-Do" concept
Manage time effectively
Establish priorities
Implement backward planning techniques
Think critically and creatively
Manage conflict
Control and coordinate actions of subordinates

Appendix J: Correspondence Courses Offered by the Marine Corps Institute (Adapted from 32:II-i - II-v)

Personnel and Administration

Introduction to Personnel Administration
General Administrative Procedures
Spelling
Punctuation
Marine Corps Reserve Personnel Administration
Mail Orderly
Correspondence
Files, Directives, and Publications
Personnel Reporting for Manpower Management System (MMS)
Manpower Management System for Supervisors
Individual Personnel Records
Personnel Administration for the Reporting Unit
Order Writing Clerk

Intelligence

Introduction to Combat Intelligence
Intelligence for the Marine Air-Ground Task Force (MAGTF)

Infantry

The Marine Noncommissioned Officer
Landmine Warfare and Demolition
The Infantry Battalion
Tactics of the Marine Rifle Squad
Functions of the Infantry Staff Noncommissioned Officer
106MM Recoilless Rifle System M40A4
Military Functions in Civil Disturbances
Map and Aerial Photograph Reading
M60 Machinegun
The 81-MM Mortar Crewman
The M224, 60-MM Mortar Crewman
Operations Against Guerrilla Units
NBC Defense for the Marine
Land Navigation
Marine Infantry Small Units in Counterinsurgency Operations
The 81-MM Mortar NCO
Reconnaissance Marine
Infantry Patrolling
Calling and Adjusting Supporting Arms
Formations, Signals, and Techniques of Fire
Fundamentals of Map Reading
The Marine Squad Leader: Combat Planning and Orders
Cold Weather Operations
Desert Operations

TOW Weapon System Crewman
Dragon Weapon System Crewman
The MPFW and LAW Crewman
The Marine Rifleman
Land Navigation
Armor Identification
The Marine Marksman
Antiarmor Operations
Operations on Urban Terrain

Logistics

The Logistics Clerk
Introduction to Amphibious Embarkation
MIMMS for Supervisors
Fixed-Wing Air Embarkation
The Marine Corps Integrated Maintenance Management System
Ground Equipment Records Clerk

Field Artillery

The M101A1, 105MM Towed Howitzer
Forward Observation for Field Artillery and Naval Gunfire Personnel
Artillery Survey for the Fire Control Man
M110A2 Self-Propelled 8-inch Howitzer Cannoneer
The M114A2, 155MM Towed Howitzer
Firing Battery Procedures
The M198, 155MM Towed Howitzer
The M109A3, 155MM Self Propelled Howitzer
The Horizontal and Vertical Control Operator
FDC Computerman

Utilities

The Refrigeration Mechanic
Air Conditioning
Fundamentals of Electricity
Installation, Operation and Operator's Maintenance of Diesel Engine-Driven Generator
Field Water Supply
Field Plumbing and Sewage Disposal
Installation, Operation and Organizational Maintenance of the Floodlight Set, Dummy Load and Solid State Convertor

Engineer, Construction Equipment, and Shore Party

Combat Engineer Noncommissioned Officer
Engineer Equipment Chief
Basic Engineer Equipment Mechanic
Engineer Equipment Operator
Metal Working and Welding Operations
Math for Marines

Fundamentals of Diesel Engines
Shore Party Man: Helicopter Operations
Bulk Fuel Man
Combat Engineer Chief: Construction Support
Engineer Equipment Mechanic
Engineer Forms and Records
Construction Print Reading
Crane and Excavator Operator
Basic Combat Engineer
Shore Party Man: Beach Operations

Drafting, Surveying and Mapping

Printing and Reproduction

Tank and Assault Amphibian Vehicle

Maintenance Checks and Services, M60/M60A1 Tank
Field Operation and Employment of the Assault Amphibian Vehicle
The 105MM Gun Tank, M60A1 (RISE) Passive
LVTP-7 Crew Functions
The LVTP-7 Logbook and Communications Equipment
Tank Gunnery, Indirect Fire
Tank Armament and Ammunition
Tank Gunnery Direct Fire

Ordnance

Repair and Maintenance of Crew-Served Weapons
Armory Procedures
Inspection and Repair of Shoulder Weapons
Pistol and Revolver Preventive and Corrective Maintenance
Inspection and Repair of the M-60 Series Machineguns

Operational Communications

Radiotelephone, Radiotelegraph, and Visual Communication Procedures
Communication Plans and Orders
Antenna Construction and Propagation of Radio Waves
Communications for the FMF Marine
Introduction to Communication Control
Communications Security
Introduction to Electronic Warfare
VHF (FM) Field Radio Equipment
Multi-Channel Radio Equipment
HF/UHF Field Radio Equipment
Field Radio Systems
Communications for the Combat Operations Center/Fire Support Coordination Center
Marine Corps Communication Center
AUTODIN Procedures

Field Wire Equipment
Field Wire Techniques
Field Switchboards-Installation and Operation
Field Wire Noncommissioned Officer
Automatic Telephone Equipment
Pole Line Construction Equipment
Pole Line Construction Techniques

<u>Signals Intelligence/Ground Electronic Warfare</u>

<u>Data/Communications Maintenance</u>

Fundamentals of Digital Logic

<u>Supply Administration and Operations</u>

Basic Warehousing
Warehousing Operations
Marine Corps Stock Lists
Organic Property Control
Sassy Organic Procedures
Sassy Management Unit
Mechanization of Warehousing and Shipment Processing (MOWASP)
Supply Management
MIMMS Procedures for the Supply Clerk

<u>Transportation</u>

<u>Food Service</u>

<u>Auditing, Finance and Accounting</u>

Accounting for Plant Property
Budget Formulation
Introduction to Marine Corps Accounting
Personal Finance
Basic Pay Entitlements

<u>Motor Transport</u>

Automotive Engine Maintenance and Repair
Automotive Power Trains
Automotive Cooling and Lubricating Systems
Automotive Brake Systems
Light Vehicle Preventive Maintenance
Automotive Fuel and Exhaust Systems
Motor Vehicle Operator
Light Vehicle Characteristics and Operating Techniques

Data Systems

Marine Corps Exchange

Public Affairs

Legal Services

Audiovisual

Music

Nuclear, Biological, and Chemical

Chemical Warfare Defense
Nuclear Warfare Defense
Opposing Forces Nuclear, Biological, and Chemical (NBC) Threat

Military Police and Corrections

Electronics Maintenance

Maintenance

Aircraft Maintenance Noncommissioned Officer
Aviation Maintenance Data System
Aviation Quality Assurance Supervision
Introduction to Aircraft Maintenance Supervision

Avionics

Aviation Ordnance

Weather Service

Airfield Services

Air-Control/Air-Support/Anti-Air Warfare

Air Traffic Control and Enlisted Flight Crews

Appendix K: Staff Noncommissioned Officer and Officer PME Courses Offered by the Marine Corps Institute
(Adapter from 32:II-v - II-vii)

Staff Noncommissioned Officers Academy Career Nonresident Program (SNCOACNP)

Applied Management
Personnel Administration
Military Law
Leadership
Military Training
Drills, Ceremonies, Uniform, Regulations and Inspections

The Basic School Nonresident Program (TBSNP)

Marine Corps History and Traditions
Techniques of Military Instruction
Map Reading and Land Navigation
Nuclear, Biological, and Chemical Warfare Defense
Supporting Arms
Combat Intelligence
Communications
Tactical Fundamentals
Rifle Platoon in the Offense
Rifle Platoon in the Defense
Advanced Tactics
Amphibious Operations

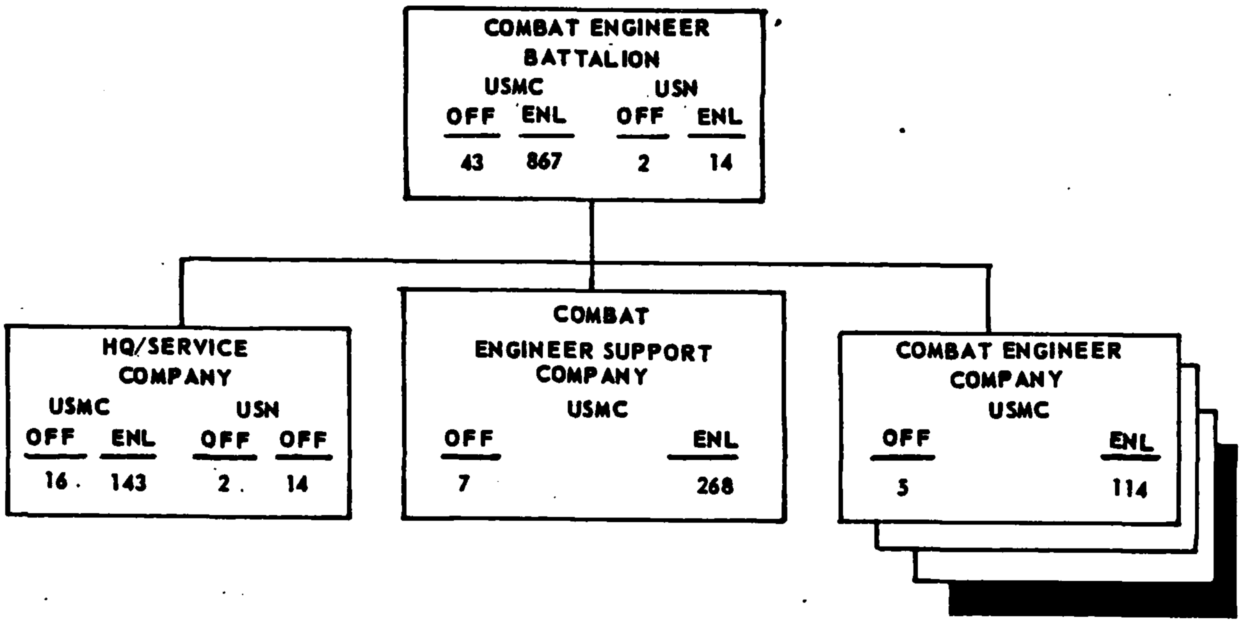
Amphibious Warfare School Nonresident Program (AWSNP)

Fleet Marine Force Organization
Marine Aviation
Fire Support
Staff Functioning
Combat Service Support
Communications
Nuclear and Chemical Support
Mechanized Operations
Tactical Fundamentals
Infantry Operations
Amphibious Doctrine
Amphibious Planning
Amphibious Exercise
Professional Communications

Command and Staff College Nonresident Program (C&SCNP)

Department of Defense
Professional Communications
Mechanized Operations
Intelligence
Fire Support
Logistics
Personnel
Marine Aviation
Command and Staff Action
Communications
Nuclear and Chemical Operations
Amphibious Doctrine
Landing Force Amphibious Operations Planning
Offensive Operations
Defensive Operations
Joint and Combined Operations
Maritime Strategy

Appendix L: Structure of the Combat Engineer Battalion



(Source 27:1)

The Combat Engineer Battalion consists of a Headquarters and Service Company, Engineer Support Company, and four Combat Engineer Companies. The H&S Company consists of elements that provide the battalion commander with facilities for command and control function, and communications support for subordinate elements of the battalion. The Engineer Support Company consists of a company headquarters, equipment platoon, utilities platoon and a motor transport platoon. Four Combat Engineer Companies are included in the battalion's organization to provide support to the infantry regiments and other division units as required. One Combat Engineer Company is in a cadre status during peacetime. Each

of the companies consists of a company headquarters and three combat engineer platoons. The Combat Engineer Companies are augmented with personnel and equipment from the Engineer Support Company and H&S Company as required by the assigned mission (27:1; 28:16).

The personnel figures presented on the above diagram are for mobilization planning. Each of the three active Combat Engineer Battalions has its own manning level, commonly called the reduced strength manning level. These levels insure that each unit is staffed to perform its peacetime mission.

An example of the Combat Engineer Officer manning in each of the components of the battalion is given below.

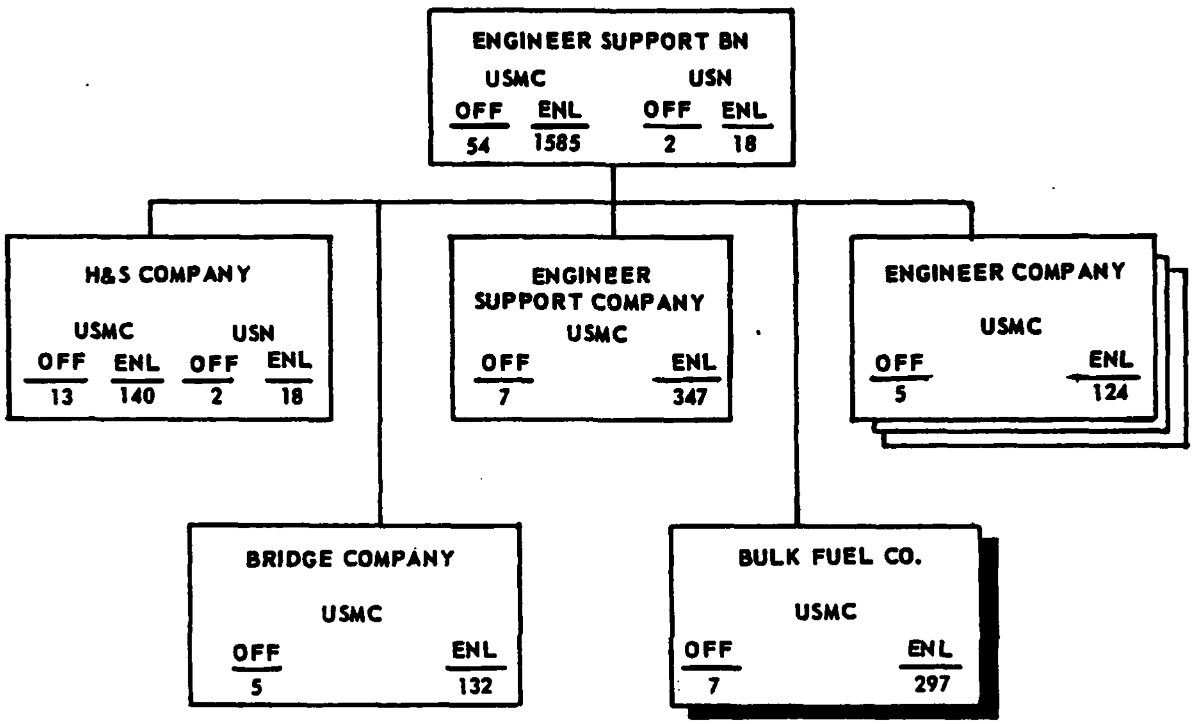
Combat Engineer Battalion - 26 of 43

H&S Company - 9 of 16

Combat Engineer Support Company - 3 of 7

Combat Engineer Company - 5 of 5

Appendix M: Structure of the Engineer Support Battalion



(Source 27:11)

The Engineer Support Battalion gives depth to the engineer effort by furnishing assistance to the Combat Engineer Battalion and assuming responsibility for engineer support to the rear of the division. It consists of a Headquarters and Service Company, an Engineer Support Company, three Engineer Companies, a Bridge Company, and two Bulk Fuel Companies. One Bulk Fuel Company is in a cadre status during peacetime (27:13).

The personnel figures presented in the above diagram are for mobilization planning. Each of the three active Engineer Support Batta-

lions has its own manning level. These levels insure that each unit is adequately staffed to perform its peacetime mission.

An example of the Combat Engineer Officer manning in each of the components of the battalion is given below.

Engineer Support Battalion - 28 of 54

H&S Company - 7 of 13

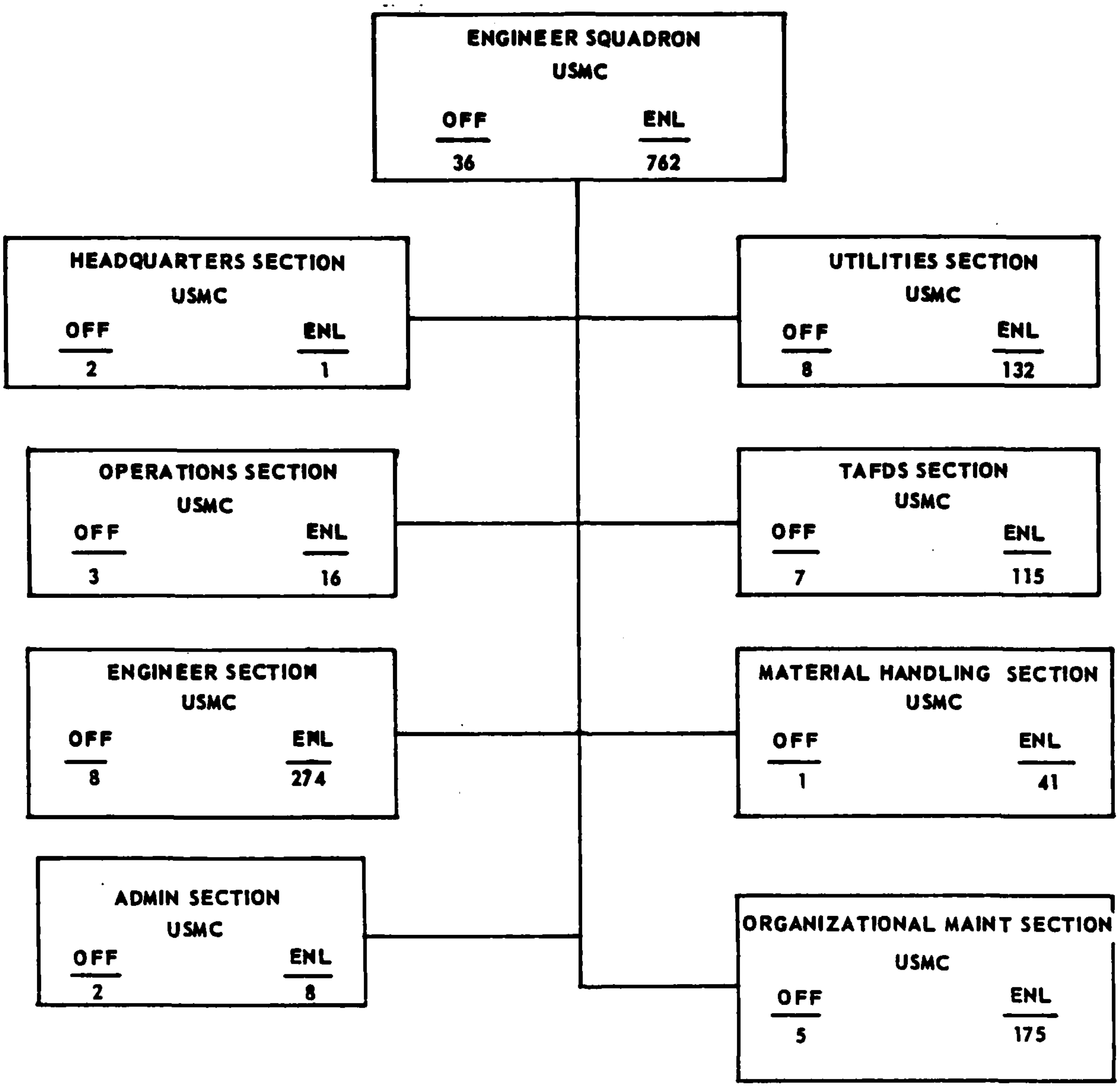
Engineer Support Company - 4 of 7

Bulk Fuel Company - None

Bridge Company - 5 of 5

Engineer Company - 4 of 5

Appendix N: Structure of the Wing Engineer Squadron



(Source 27:31)

The Wing Engineer Squadron is structured to provide both tactical and combat service support to the Marine Aircraft Wing. This includes the construction, improvement, and maintenance of helicopter and light

reconnaissance aircraft landing sites; fuel support with TAFDS and HERS equipment; the provision of essential utilities; and general combat engineer support. The squadron is organized to provide one engineer unit and one TAFDS unit for each tactical Marine aircraft group with an additional engineer unit for the MAW headquarters elements and ground control group. The engineer unit is the basic engineer support unit for the squadron and is the nucleus for structuring the engineer support organization of any element of the wing (28:29).

The personnel figures presented in the above diagram are for mobilization planning. Each of the three active Wing Engineer Squadrons has its own manning level that insures adequate staffing for the performance of peacetime missions.

An example of the Combat Engineer Officer manning in each of the components of the squadron is given below:

Wing Engineer Squadron - 13 of 36

Headquarters Section - 2 of 2

Operations Section - 3 of 3

Engineer Section - 8 of 8

Administration Section, Utilities Section, TAFDS Section, Material Handling Section, Organizational Maintenance Section - None

Appendix O: Task List—Military Qualification Standards II, Engineer, Specialty Code 21 (Adapted from 7:i-viii)

Advise on employment of scatterable mines

Supervise preparation of decoy fighting positions

Supervise installation of booby traps

Supervise assault breach

Supervise installation of minefields

Supervise installation of row minefields with the Antitank Mine Dispensing System M57

Prepare/process minefield recording forms

Plan the installation of minefields

Supervise clearing of booby traps

Supervise installation of the M16A1 bounding fragmentation antipersonnel mine

Supervise disarming of the M16A1 bounding fragmentation antipersonnel mine

Supervise disarming of the M15 heavy antitank mine

Supervise installation of the M15 heavy antitank mine

Supervise installation of hasty protective minefield

Supervise deliberate breach

Supervise minefield clearing operations

Supervise reconnaissance of a demolition target

Prepare target folders (nonnuclear)

Conduct route clearance operation using explosives

Enforce explosive and demolition safety requirements

Clear land with demolitions

Supervise calculation and placement of military explosives

Create obstacles using explosives

Supervise employment of the combat engineer vehicle in obstacle breaching operation

Plan/supervise construction of reinforcing obstacles using engineer equipment

Supervise removal of obstacles using engineer equipment

Supervise cratering of roads during obstacle operations

Supervise disabling of bridges during obstacle operations
Plan/supervise construction of revetments
Plan/supervise construction of assault bunker
Plan/supervise construction of antitank ditch
Supervise construction of tracked vehicle fighting position
Supervise construction of artillery emplacements
Plan/site field fortifications
Coordinate with other combat arms for best use of terrain
Evaluate terrain using aerial photographs
Conduct reconnaissance for obstacle locations
Conduct engineering reconnaissance mission
Conduct hasty route reconnaissance
Insure map availability
Conduct reconnaissance of enemy minefield
Prepare and disseminate an overlay
Supervise camouflage of organic vehicles/equipment
Advise/supervise other units on camouflage
Conduct deliberate route reconnaissance
Plan/supervise reconnaissance of rivers
Conduct special reconnaissance missions
Plan/supervise reconnaissance of crossing sites
Classify tunnels, underpasses, and similar obstructions
Plan/conduct engineer support for the assault phase of a river crossing
Design upgrade of existing Bailey Bridge
Design a nonstandard bridge
Design M4T6 fixed span
Design simple span Bailey Bridge
Design multispan Bailey Bridge
Design Medium Girder Bridge (MGB)
Classify timber trestle bridges
Classify masonry arch bridges
Classify concrete t-beam bridges
Plan/conduct aluminum foot bridge crossing operation
Classify river-crossing sites

Design anchorage system
Plan/conduct rafting operations
Plan/conduct float bridge operations
Schedule earthmoving equipment operations
Plan/supervise construction of hasty helicopter landing zone
Plan/supervise clearing, grubbing, and stripping operations
Plan earthmoving operations using a mass diagram
Plan/supervise cut and fill operations
Plan/supervise backfill and compaction operations
Improve soils by stabilization
Design culverts
Plan/supervise construction of fords
Plan/supervise maintenance of earth roads
Install expedient surfaces
Prepare base for bituminous wearing surface
Apply surface treatment
Design and apply bituminous mixes
Apply road mix pavement surface
Maintain bituminous wearing surfaces
Conduct ice/snow removal operations
Plan/supervise borrow operations
Select quarry site
Develop quarry site
Determine/exercise quality control measures for quarry crusher operations
Plan/supervise quality control testing of concrete
Determine dial settings for M919 concrete mobile
Develop a reinforcing steel schedule
Delineate and estimate drainage areas
Design open channels
Estimate quantity of surface runoff
Estimate runoff through successive areas
Select erosion controls
Plan/supervise construction of combat roads and trails
Design a military road

Design Theater of Operations (T/O) road geometrics

Prepare mass diagram

Establish orientation and geometrics of Theater of Operations airport/ heliport facility

Design landing strip structure

Perform rapid runway repair

Construct forward tactical landing strip

Determine soil trafficability

Plan/supervise construction and maintenance of combat roads and trails

Design permanent flexible pavement structures

Design unsurfaced Theater of Operations pavement structures

Supervise use, accountability, and maintenance of engineer handtools

Design a boom derrick

Design a shears assembly

Compute concrete mix design based on given strength requirements

Design concrete formwork

Interpret plans and specifications

Plan construction of Theater of Operations building

Supervise construction of Theater of Operations building

Plan/supervise construction of concrete pad

Plan/supervise construction of a vertical concrete wall

Design electrical distribution system

Lay out a troop camp

Design a drypoint water distribution system

Design a sewerage system

Design a pipeline system

Lay out a petroleum, oils, and lubricants (POL) tank farm

Inspect maintenance of pioneer tool sets

Inventory platoon tools

Inspect maintenance of fiber/wire rope and rigging equipment

Define key events/activities and establish milestones

Establish time requirements and develop master schedule

Plan assignment of work packages to organizational units

Review project work progress in relation to plans, schedules, and costs

Modify/update plans, schedules, and budget

Identify and analyze project work problems

Conduct fire inspections

Estimate a project duration

Prepare an early start schedule

Revise early start schedules

Analyze construction directives

Conduct construction site investigation

Determine surveying operation requirements for construction projects

Estimate requirements for personnel and equipment for a construction project

Prepare construction directive

Prepare critical path networks

Organize construction work forces

Prepare construction reports

Conduct construction inspections

Prepare quality control plans

Monitor project execution and quality control by observation and reports review

Coordinate construction project plans

Estimate construction materials

Prepare implementation plan for the Army environmental program for field training exercise

Select water point site from maps/photos

Conduct disaster relief/recovery operations

Conduct installation mobilization planning

Implement revision/update of the installation master plan

Appendix P: Results of the Marine Corps Junior Officer Occupational Analysis (Source 36:Appendix C)

CASES	TASKS	DUTIES	MEMBERS
665	722	18	645

ORDERED BY
COUNT OF DUTIES OR TASKS LISTED (N)
CUMULATIVE SUM OF AVERAGE PERCENT TIME SPENT BY ALL MEMBERS (4th %)
AVERAGE PERCENT TIME SPENT BY ALL MEMBERS (3rd %)
AVERAGE PERCENT TIME SPENT BY MEMBERS PERFORMING (2nd %)
PERCENT OF MEMBERS PERFORMING (1st %)

D-TSK	TASK TITLE	%	%	%	%	N
I 39	ATTEND BRIEFINGS	64.96	1.46	0.94	0.94	
L 2	PASS ON INFORMATION TO PERSONNEL	55.04	1.70	0.94	1.88	
R 21	READ/STUDY NATOPS PROCEDURES	24.96	3.59	0.89	2.77	
L 13	ENFORCE STANDARDS OF APPEARANCE OR BEHAVIOR	63.10	1.35	0.85	3.62	
I 38	ATTEND UNIT SOCIAL OR SPORTS ACTIVITIES	64.18	1.28	0.82	4.44	5
I 67	READ TECHNICAL MANUALS, BOOKS, AND PERIODICALS	53.64	1.46	0.78	5.23	
L 7	COUNSEL PERSONNEL ON PERFORMANCE	65.89	1.13	0.74	5.97	
A 13	CONDUCT ON-THE-JOB TRAINING (OJT)	55.19	1.33	0.73	6.70	
L 4	ANALYZE PERSONAL PROBLEMS, COMPLAINTS OR GRIEVANCES OF PERSONNEL	55.35	1.32	0.73	7.43	
R 17	FLY AIRCRAFT	24.34	2.97	0.72	8.15	10
A 32	PARTICIPATE IN OPERATIONAL EXERCISES	54.26	1.31	0.71	8.86	
I 53	DRAFT MILITARY CORRESPONDENCE	39.84	1.56	0.62	9.48	
L 5	ASSIGN PROFICIENCY AND CONDUCT MARKS	59.22	1.02	0.60	10.08	
R 24	PLAN AIRCRAFT FLIGHT	22.48	2.62	0.59	10.67	
R 30	PREPARE FLIGHT PLANS DD FORM 175	24.18	2.43	0.59	11.26	15
I 68	RESPOND TO CORRESPONDENCE RELATED TO AREA OF RESPONSIBILITY	40.62	1.43	0.58	11.84	
I 17	MAINTAIN ADMINISTRATIVE FILES/RECORDS	37.36	1.51	0.56	12.40	
A 15	DETERMINE TRAINING REQUIREMENTS FOR PERSONNEL	42.79	1.32	0.56	12.96	
G 3	ADMINISTER VERBAL REPRIMANDS	55.97	0.98	0.54	13.50	
H 35	RECOMMEND ENLISTED PERSONNEL FOR PROMOTION REDUCTION	58.60	0.92	0.54	14.04	20
A 44	SUPERVISE TRAINING OF UNIT/SECTION PERSONNEL	43.87	1.20	0.52	14.56	
A 36	PROVIDE INPUT TO UNIT TRAINING SCHEDULE	43.56	1.19	0.52	15.08	
H 15	APPROVE, DISAPPROVE LEAVES/PASSES	55.81	0.93	0.52	15.60	
I 32	COORDINATE ACTIVITIES WITH OTHER SECTIONS/UNITS	41.24	1.26	0.52	16.12	
R 16	PREFLIGHT POSTFLIGHT AIRCRAFT	19.38	2.66	0.51	16.63	25
G 20	COUNSEL PERSONNEL ON DISCIPLINARY MATTERS	48.52	1.04	0.50	17.13	
L 24	PROVIDE INFORMAL FEEDBACK TO SUBORDINATES	41.24	1.19	0.49	17.62	
R 25	BRIEF/DEBRIEF CREW MEMBERS	19.38	2.55	0.49	18.12	
L 26	WRITE FITNESS REPORTS	48.37	1.01	0.49	18.60	
H 12	ASSIGN PRIORITIES FOR TASK ACCOMPLISHMENT	41.86	1.16	0.48	19.09	30
R 32	PARTICIPATE IN AIRCREW TRAINING	19.22	2.50	0.48	19.57	

D-TSK	TASK TITLE	%	%	% ****	%	N
L 15	FOLLOW UP ON COUNSELING TO DETERMINE IMPROVEMENT IN SITUATION	46.36	1.01	0.47	20.04	
Q 21	DETERMINE LOCATION ON A MAP	40.62	1.16	0.47	20.50	
L 9	COUNSEL PERSONNEL ON PROFESSIONAL DEVELOPMENT SUCH AS PROMOTION. EDUCATION. OR CAREER OPPORTUNITIES	51.32	0.90	0.46	20.96	
R 19	TURN UP AIRCRAFT	19.53	2.36	0.46	21.42	35
K 7	CONDUCT PERSONNEL INSPECTIONS	51.00	0.88	0.45	21.88	
H 30	ORIENT NEW PERSONNEL	49.14	0.90	0.44	22.32	
I 78	INTERPRET LEAVE AND EARNING STATEMENT (LES)	46.66	0.95	0.44	22.76	
A 23	EVALUATE INDIVIDUAL TRAINING	41.08	1.06	0.44	23.19	
A 22	ESTABLISH TRAINING PROGRAMS	38.60	1.13	0.44	23.63	40
H 18	ASSIGN TASKS OR PROJECTS TO UNIT PERSONNEL	40.15	1.08	0.43	24.06	
Q 17	IDENTIFY TERRAIN FEATURES ON MAP	39.22	1.11	0.43	24.49	
R 18	TAXI AIRCRAFT	18.45	2.34	0.43	24.92	
Q 4	DETERMINE GROUND DISTANCE ON MAP	41.86	1.02	0.42	25.35	
A 35	PROVIDE INPUT TO SHORT RANGE TRAINING PLAN	39.53	1.07	0.42	25.77	45
A 39	SCHEDULE UNIT TRAINING	31.78	1.32	0.42	26.19	
A 34	PREPARE TRAINING REPORTS	27.75	1.51	0.42	26.61	
L 22	PLAN FOR WELFARE OF TROOPS	40.31	1.01	0.41	27.02	
Q 9	NAVIGATE USING MAP/COMPASS	38.45	1.07	0.41	27.42	
B 17	FIRE M16A1 RIFLE	59.53	0.68	0.40	27.83	50
H 23	IDENTIFY/ASSIST IN RESOLUTION OF PAY PROBLEMS	43.10	0.94	0.40	28.23	
L 1	READ PROFESSIONAL PUBLICATIONS/MATERIALS	34.26	1.19	0.40	28.64	
L 8	COUNSEL PERSONNEL ON DOMESTIC MATTERS	45.89	0.88	0.40	29.04	
L 16	IMPLEMENT ACTIONS TO RESOLVE PERSONAL PROBLEMS	41.70	0.97	0.40	29.44	
A 33	PREPARE INSTRUCTIONAL MATERIALS SUCH AS COURSE OUTLINES LESSON PLANS. STUDY MATERIALS, OR TRAINING AIDS	42.79	0.91	0.39	29.83	55
G 7	CHARGE OFFENSES UNDER UCMJ	46.66	0.82	0.38	30.21	
I 25	DEVELOP SHORT-RANGE PLANS	30.54	1.25	0.38	30.59	
K 9	PARTICIPATE IN DRILL AND CEREMONIES	46.51	0.82	0.38	30.97	
A 29	NOMINATE PERSONNEL FOR FORMAL SCHOOLS OR TRAINING	49.46	0.75	0.37	31.34	
I 44	APPROVE SIGN GENERAL CORRESPONDENCE	28.37	1.30	0.37	31.71	60
B 16	FIRE PISTOL	53.95	0.68	0.36	32.08	
L 28	WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	44.96	0.81	0.36	32.44	
Q 7	NAVIGATE BY DEAD RECKONING	33.49	1.09	0.36	32.80	
Q 2	DETERMINE THE ELEVATION OF A POINT ON THE GROUND USING A MAP	38.45	0.92	0.35	33.16	
I 22	EDIT OFFICIAL CORRESPONDENCE	21.70	1.60	0.35	33.50	65
A 11	CONDUCT FORMAL CLASSROOM TRAINING	44.34	0.78	0.34	33.85	
Q 3	DETERMINE A GRID AZIMUTH BETWEEN TWO POINTS ON A MAP	37.67	0.91	0.34	34.19	
H 17	ASSIGN/RECOMMEND PERSONNEL TO DUTY POSITIONS	40.15	0.84	0.34	34.52	
I 76	WRITE/UPDATE STANDING OPERATING PROCEDURES (SOP)	34.26	0.99	0.34	34.86	
I 77	WRITE UNIT MEMORANDUMS DIRECTIVES	29.14	1.16	0.34	35.20	70
A 31	PARTICIPATE IN COMMAND POST EXERCISES	36.74	0.92	0.34	35.53	
I 74	WRITE AFTER ACTION REPORTS	36.43	0.92	0.33	35.86	
A 7	ATTEND TECHNICAL TRAINING OR PROFESSIONAL MILITARY EDUCATION COURSES	31.00	1.07	0.33	36.20	

D-TSK	TASK TITLE	%	%	% ****	%	N
R 31	PARTICIPATE IN EGRESS DRILLS	21.39	1.56	0.33	36.53	
G 13	CONDUCT INFORMAL JAG INVESTIGATIONS	45.42	0.72	0.33	36.86	75
I 58	INSPECT RECORDS, ADMINISTRATIVE FILES/DIRECTIVES	27.75	1.19	0.33	37.18	
I 61	MAINTAIN STATUS CHARTS/BOARDS	25.74	1.28	0.33	37.51	
A 6	ATTEND EDUCATION OR TRAINING CONFERENCES	31.78	1.04	0.33	37.84	
Q 5	LOCATE AN UNKNOWN POINT ON MAP/GROUND	35.04	0.94	0.33	38.17	
G 2	ADVISE PERSONNEL OF THEIR RIGHTS UNDER ARTICLE 31 UCMJ OR 5TH AMENDMENT WARNING	42.17	0.76	0.32	38.49	80
A 24	EVALUATE UNIT TRAINING	29.30	1.09	0.32	38.81	
Q 1	CONDUCT A MAP RECONNAISSANCE	34.57	0.93	0.32	39.13	
I 62	MONITOR ACTION MESSAGES	26.66	1.19	0.32	39.44	
J 120	INVENTORY EQUIPMENT, SUPPLIES, OR FACILITIES	27.90	1.14	0.32	39.76	
H 39	REVIEW T/O'S OR T/E'S	30.38	1.02	0.31	40.07	85
L 10	DEVELOP IDEAS/PROGRAMS TO UP GRADE OR IMPROVE MORALE	36.12	0.86	0.31	40.38	
G 4	APPROVE/DISAPPROVE DISCIPLINARY ACTIONS	33.80	0.89	0.30	40.68	
G 33	RECOMMEND DISCIPLINARY OR CORRECTIVE ACTIONS, SUCH AS ARTICLE 15 OR VERBAL REPRIMANDS	35.35	0.84	0.30	40.97	
H 36	RECOMMEND PERSONNEL ASSIGNMENTS	32.40	0.92	0.30	41.27	
A 27	MONITOR CLASSROOM INSTRUCTION	35.19	0.83	0.29	41.56	90
Q 11	CONVERT GRID AZIMUTH TO MAGNETIC AZIMUTH	33.49	0.87	0.29	41.85	
F 4	PRACTICE COMMUNICATION SECURITY	29.14	1.00	0.29	42.14	
H 19	CONDUCT BRIG/HOSPITAL VISITS	42.17	0.68	0.29	42.43	
H 46	VERIFY SRB/OQR ENTRIES	30.54	0.94	0.29	42.72	
I 2	CONDUCT PAY CALLS	30.38	0.95	0.29	43.00	95
I 69	REVIEW TECHNICAL MANUALS/INSTRUCTIONS	26.51	1.09	0.29	43.29	
K 8	CONDUCT RIFLE/PISTOL INSPECTIONS	37.83	0.76	0.29	43.58	
I 65	PREPARE BRIEFINGS	24.34	1.17	0.28	43.86	
H 27	COUNSEL PERSONNEL ON PERSONAL FINANCIAL MANAGEMENT	39.38	0.70	0.28	44.14	
H 31	ASSIGN PERSONNEL TO ADDITIONAL DUTIES	38.14	0.73	0.28	44.42	100
A 14	DETERMINE REQUIREMENTS FOR TRAINING EQUIPMENT AND FACILITIES	28.22	0.98	0.28	44.69	
H 28	COUNSEL PERSONNEL ON CAREER MOTIVATION MATTERS	35.04	0.78	0.27	44.96	
H 41	SCHEDULE LEAVES/PASSES	33.49	0.79	0.26	45.23	
I 71	REVIEW UNIT DIRECTIVES	23.56	1.13	0.26	45.49	
H 13	ANALYZE WORK LOAD REQUIREMENTS	24.34	1.08	0.26	45.75	105
L 23	PROMOTE SELF-IMPROVEMENT OPPORTUNITIES SUCH AS OFF-DUTY EDUCATION OPPORTUNITIES	27.28	0.96	0.26	46.01	
A 5	ARRANGE FOR FORMAL TRAINING, SUCH AS SPECIAL COURSES OR INTERSERVICE TRAINING	23.25	1.10	0.26	46.27	
J 1	SUPERVISE PERSONNEL PERFORMING MAINTENANCE MANAGEMENT DUTIES	22.17	1.16	0.26	46.52	
K 11	INSPECT ORGANIZATIONAL PROPERTY SUCH AS FACILITIES OR EQUIPMENT	27.28	0.94	0.26	46.78	
L 12	DOCUMENT COUNSELING SESSIONS	34.11	0.76	0.26	47.04	110
B 15	INVENTORY ARMORY FOR WEAPON ACCOUNTABILITY	34.26	0.75	0.26	47.29	
K 14	PARTICIPATE IN MILITARY CEREMONIAL FUNCTIONS, SUCH AS DINING-INS OR AWARDS AND DECORATIONS CEREMONIES	34.26	0.74	0.25	47.54	
L 11	DIRECT LEADERSHIP TRAINING	32.56	0.78	0.25	47.80	

D-TSK	TASK TITLE	%	%	% ****	%	N
A 3	ADMINISTER TESTS TO PERSONNEL	32.87	0.77	0.25	48.05	
I 27	DEVELOP GOALS OR OBJECTIVES FOR CURRENT OR ON GOING OPERATIONS	24.50	1.02	0.25	48.30	115
J 36	MONITOR PREVENTIVE MAINTENANCE PROGRAM	22.63	1.11	0.25	48.54	
K 2	SCHEDULE INSPECTIONS	31.78	0.79	0.25	48.79	
L 20	IMPLEMENT PROGRAMS TO UPGRADE OR IMPROVE MORALE	29.14	0.85	0.25	49.04	
H 11	CLARIFY/INTERPRET POLICIES/DIRECTIVES FOR PERSONNEL	25.74	0.96	0.24	49.28	
I 9	ROUTE INCOMING CORRESPONDENCE MESSAGES	18.76	1.31	0.24	49.53	120
Q 19	ORIENT MAP USING COMPASS	30.23	0.80	0.24	49.77	
P 29	CONTROL CLASSIFIED MATERIAL	14.88	1.61	0.24	50.00	
Q 12	CONVERT MAGNETIC AZIMUTH TO GRID AZIMUTH	29.14	0.82	0.24	50.24	
B 2	INSPECT M16A1 RIFLE FOR SERVICEABILITY	32.56	0.72	0.23	50.47	
G 32	QUESTION SUSPECTS, WITNESSES, OR COMPLAINANTS	27.44	0.83	0.23	50.70	125
A 38	REVIEW PROGRESS OF PERSONNEL IN AN OUT STATUS	24.50	0.94	0.23	50.93	
A 18	DIRECT REMEDIAL TRAINING PROGRAMS	22.17	1.04	0.23	51.16	
H 47	RECOMMEND PERSONNEL FOR REENLISTMENT	32.71	0.68	0.22	51.38	
A 1	ADMINISTER ALCOHOL/DRUG ABUSE PROGRAM	20.31	1.08	0.22	51.60	
I 43	ANALYZE REPORTS CHARTS TO IDENTIFY PROBLEM AREAS	19.07	1.17	0.22	51.82	130
I 47	AUDIT SRB/OQR ENTRIES	22.63	0.98	0.22	52.04	
P 31	SAFEGUARD CLASSIFIED/RESTRICTED MATERIAL	14.57	1.51	0.22	52.26	
I 7	SCHEDULE MEETINGS AND CONFERENCES	24.96	0.87	0.22	52.47	
I 52	DRAFT MESSAGES FOR ELECTRICAL TRANSMISSION	19.07	1.15	0.22	52.69	
I 79	INSTRUCT TRAIN PERSONNEL ON VOTING REGISTRATION	24.65	0.88	0.22	52.90	135
G 6	ASSIGN EXTRA MILITARY INSTRUCTION (EMI) FOR BREACHES OF DISCIPLINE OR STANDARDS	28.99	0.73	0.21	53.12	
I 60	INTERPRET COMPUTATION OF PAY AND ALLOWANCES	16.74	1.29	0.21	53.33	
P 28	RECEIPT FOR CLASSIFIED MATERIAL	18.14	1.17	0.21	53.54	
L 14	ESTABLISH SOCIAL, SPORTS, OR OTHER RECREATIONAL PROGRAMS OR EVENTS	22.17	0.94	0.21	53.75	
P 21	INVENTORY CLASSIFIED MATERIAL	13.33	1.56	0.21	53.96	140
R 28	CONDUCT AIR TO GROUND TACTICS TRAINING	11.16	1.89	0.21	54.16	
G 16	CONDUCT LAWFUL SEARCH	33.64	0.61	0.20	54.37	
N 6	EMPLOY TROOP LEADING STEPS	24.80	0.82	0.20	54.57	
G 24	ADVISE PERSONNEL OF MAXIMUM PUNISHMENT AWARDABLE FOR OFFENSES	22.63	0.90	0.20	54.77	
I 5	WRITE MILITARY BRIEFINGS	19.53	1.02	0.20	54.97	145
J136	REVIEW SUPPLY REQUISITIONS	15.66	1.26	0.20	55.16	
H 14	ANALYZE MANPOWER PROJECTIONS	18.91	1.02	0.19	55.35	
A 37	REVIEW/APPROVE INSTRUCTIONAL MATERIALS, SUCH AS COURSE OUTLINES, LESSON PLANS, STUDY MATERIALS, OR TRAINING AIDS	25.74	0.75	0.19	55.55	
I 54	DRAFT RESPONSES TO INSPECTION REPORTS	21.24	0.91	0.19	55.74	
J121	ISSUE EQUIPMENT OR SUPPLIES	13.49	1.43	0.19	55.93	150
A 47	CONDUCT UNIT OR FACILITY WALK THROUGH VISITS	17.21	1.12	0.19	56.12	
A 45	WRITE INDIVIDUAL/UNIT TRAINING OBJECTIVES	22.48	0.86	0.19	56.31	
I 41	ARRANGE UNIT SOCIAL/SPORT ACTIVITIES	21.70	0.86	0.19	56.50	
B 23	DISASSEMBLE/REASSEMBLE M16A1 RIFLE	35.04	0.54	0.19	56.69	

D-TSK	TASK TITLE	%	%	% ****	%	N
B 24	DISASSEMBLE REASSEMBLE CALIBER .45 PISTOL	35.04	0.54	0.19	56.88	155
B 1	INSPECT PISTOL FOR SERVICEABILITY	30.08	0.62	0.18	57.06	
G 30	PREPARE RECOMMENDATIONS FOR DISCHARGES	21.55	0.84	0.18	57.24	
H 37	REVIEW/APPROVE WORK/SHIFT SCHEDULES	21.70	0.83	0.18	57.42	
H 38	REVIEW REQUESTS FROM SUBORDINATES SUCH AS SCHOOL APPLICATION OR OFF-DUTY EMPLOYMENT REQUESTS	26.20	0.69	0.18	57.60	
A 17	DIRECT APPLICATION OF SAFETY AROUND HELICOPTERS	15.35	1.19	0.18	57.78	160
I 24	ESCORT VISITORS	21.70	0.84	0.18	57.96	
I 30	DEVELOP MANAGEMENT POLICIES	20.15	0.90	0.18	58.14	
I 51	DRAFT CHANGES TO DIRECTIVES, MANUALS OR REGULATIONS	16.59	1.10	0.18	58.32	
J 32	REVIEW ERO FOR CORRECTNESS AND COMPLETENESS	20.31	0.89	0.18	58.50	
J 85	INITIATE ACTIONS TO CORRECT DEVIATIONS FROM SAFETY STANDARDS	15.04	1.20	0.18	58.68	165
R 23	OPERATE AIRCRAFT SIMULATORS	11.32	1.61	0.18	58.86	
C 27	INSPECT PROTECTIVE MASK FOR SERVICEABILITY	29.30	0.59	0.17	59.03	
I 57	RECOMMEND CHANGES TO PUBLICATIONS/DIRECTIVES	18.76	0.92	0.17	59.21	
J149	SUPERVISE PERSONNEL MAINTAINING ECR CARDS	16.43	1.06	0.17	59.38	
R 14	ATTEND SAFETY BACK IN SADDLE LECTURES	11.78	1.48	0.17	59.55	170
I 13	ORGANIZE UNIT INVOLVEMENT IN FUND DRIVES, BLOOD DRIVES, OR SOCIAL CEREMONIES	24.80	0.69	0.17	59.72	
K 4	DIRECT CORRECTIVE ACTIONS RESULTING FROM INSPECTIONS	19.84	0.85	0.17	59.89	
O 4	ANALYZE EFFECTS OF TERRAIN ON SITUATION	23.41	0.72	0.17	60.05	
O 7	CONDUCT A HELICOPTERBORNE ASSAULT	19.53	0.87	0.17	60.22	
A 49	COMPILE INFORMATION FOR COMMAND CHRONOLOGY REPORTS	15.66	1.09	0.17	60.39	175
C 26	MAINTAIN PROTECTIVE MASK AND ACCESSORIES	25.27	0.67	0.17	60.56	
H 29	MODIFY ORGANIZATIONAL STRUCTURE TO ACCOMPLISH MISSION REQUIREMENTS	20.62	0.80	0.16	60.72	
I 8	SET PRODUCTION OR OPERATIONAL DEADLINES/TIMETABLES	19.07	0.86	0.16	60.89	
G 8	IDENTIFY CIRCUMSTANTIAL/DIRECT EVIDENCE	19.22	0.87	0.16	61.05	
J 86	IDENTIFY DEVIATIONS FROM SAFETY STANDARDS OR PRACTICES	13.02	1.26	0.16	61.21	180
F 6	SUPERVISE THE TRAINING OF PERSONNEL IN TACTICAL RADIO NET OPERATIONS, PROCEDURES AND RULES	19.69	0.85	0.16	61.38	
B 13	PREPARE/SUBMIT RANGE ROSTERS	19.38	0.86	0.16	61.54	
B 22	SUPERVISE PERSONNEL PERFORMING LIVE FIRE RANGE DUTIES	24.18	0.68	0.16	61.71	
I 1	ADVISE PERSONNEL ON TYPES OF DISCHARGEES	23.72	0.68	0.16	61.87	
G 17	CONDUCT SHAKE DOWNS	28.68	0.56	0.16	62.03	185
G 9	IDENTIFY/DEFINE EVIDENCE	17.98	0.90	0.16	62.19	
J125	MAINTAIN ACCOUNTABILITY FOR ORGANIZATIONAL AND INSTALLATION PROPERTY	13.02	1.25	0.16	62.35	
P 22	MAINTAIN/CONTROL CLASSIFIED INFORMATION FILES	8.99	1.80	0.16	62.51	
G 36	REVIEW RESULTS OF INVESTIGATIONS	12.87	1.21	0.16	62.66	
I 73	STAFF CORRESPONDENCE	12.71	1.26	0.16	62.82	190
J105	CONTROL FUND EXPENDITURES	9.14	1.71	0.16	62.97	
B 10	SUPERVISE PERSONNEL PERFORMING WEAPONS FIRING OPERATIONS	24.03	0.66	0.16	63.13	
G 21	DRAFT LEGAL STATEMENTS	15.04	1.04	0.16	63.29	
G 12	CONDUCT ACCIDENT INVESTIGATIONS	24.03	0.66	0.16	63.44	

D-TSK	TASK TITLE	%	%	% ****	%	N
G 29	PREPARE INVESTIGATIVE REPORTS	14.88	1.07	0.16	63.60	195
H 10	DETERMINE UNIT WORK FLOW	17.67	0.87	0.15	63.75	
G 23	DOCUMENT NON-JUDICIAL PUNISHMENT ACTIONS	13.80	1.11	0.15	63.90	
H 43	VERIFY UNIT DIARY (UD) ENTRIES	12.09	1.26	0.15	64.05	
I 49	PREPARE COMMAND CHRONOLOGY	10.38	1.48	0.15	64.21	
J 39	MONITOR CORRECTIVE MAINTENANCE PROGRAM	14.26	1.07	0.15	64.36	200
J 93	ALLOCATE FUNDS	10.54	1.45	0.15	64.51	
N 5	DEVELOP INPUTS TO UNIT PLANS OR OPERATIONS ORDERS	19.84	0.77	0.15	64.66	
A 10	CONDUCT ATHLETIC MEETS	20.31	0.76	0.15	64.81	
H 21	COORDINATE MANPOWER REQUIREMENTS	15.81	0.94	0.15	64.96	
I 15	PARTICIPATE IN CONFERENCES OR WORKING GROUPS	18.14	0.84	0.15	65.11	205
I 81	NOTIFY NOK OF PERSONNEL IN UA/DESERTION STATUS	23.72	0.62	0.15	65.26	
J 4	MONITOR MAINTENANCE SAFETY PROGRAM	12.25	1.22	0.15	65.41	
J 87	EXPLAIN SAFETY STANDARDS TO UNIT PERSONNEL	16.90	0.87	0.15	65.55	
K 17	REVIEW INSPECTION REPORTS	15.04	1.00	0.15	65.70	
G 35	IDENTIFY CHARGES SPECIFICATIONS FROM MANUAL FOR COURTS-MARTIAL (MCM)	16.90	0.86	0.14	65.85	210
G 10	COLLECT/MARK EVIDENCE	20.31	0.72	0.14	65.99	
J 33	MONITOR ERO FOR PROGRESSION THROUGH MAINTENANCE/SUPPLY PROCESS	16.28	0.89	0.14	66.13	
J 81	REPORT SAFETY VIOLATIONS	15.97	0.92	0.14	66.28	
P 9	DESTROY CLASSIFIED DOCUMENTS	11.32	1.29	0.14	66.42	
R 22	INSTRUCT TRAIN PERSONNEL IN NATOPS PROCEDURES	7.90	1.84	0.14	66.57	215
G 5	ARRANGE FOR PRETRIAL CONFINEMENT PENDING DISPOSITION OF OFFENSE	17.21	0.82	0.14	66.71	
I 33	DESIGN ADMINISTRATIVE CHARTS OR GRAPHS, SUCH AS STATUS BOARDS	16.90	0.84	0.14	66.85	
F 5	SUPERVISE THE TRAINING OF PERSONNEL IN MESSAGE DRAFTING AND COMMUNICATION SECURITY	17.67	0.79	0.14	66.99	
P 24	PRACTICE SECURITY MEASURES FOR HANDLING, STOWAGE, AND MARKING OF CLASSIFIED MATERIALS	9.30	1.52	0.14	67.13	
Q 18	MEASURE GROUND DISTANCE BY PACING	22.17	0.63	0.14	67.27	220
F 7	SUPERVISE THE TRAINING OF PERSONNEL IN THE USE OF TACTICAL COMMUNICATIONS	17.98	0.79	0.14	67.41	
E 11	AUTHENTICATE MESSAGES	23.10	0.60	0.14	67.54	
A 30	ORGANIZE UNIT SPORTS PROGRAM	16.43	0.85	0.14	67.68	
I 29	DEVELOP LONG-RANGE PLANS	15.66	0.89	0.14	67.81	
I 42	ARRANGE CONFERENCES, MEETINGS, OR WORKING GROUPS	14.26	0.97	0.14	67.95	225
J 29	MONITOR INPUT TO THE MARINE CORPS INTEGRATED MAINTENANCE MANAGEMENT SYSTEM (MIMMS)	14.88	0.93	0.14	68.09	
J 78	MONITOR MAINTENANCE SCHEDULES	12.71	1.08	0.14	68.22	
J 84	MONITOR GROUND SAFETY PROGRAMS	11.16	1.23	0.14	68.36	
H 16	APPROVE/DISAPPROVE TEMPORARY DUTY ASSIGNMENTS	19.84	0.70	0.14	68.49	
A 9	CONDUCT ADMINISTRATIVE MARCHES	23.10	0.59	0.14	68.63	230
Q 6	NAVIGATE WITH AERIAL PHOTOGRAPHS	19.84	0.70	0.14	68.77	
R 20	INSTRUCT/TRAIN PERSONNEL IN AIRCRAFT TACTICS	7.13	1.92	0.14	68.90	

D-TSK	TASK TITLE	%	%	%	%	N
B 12	SUPERVISE PERSONNEL PERFORMING WEAPONS MAINTENANCE	18.91	0.70	0.13	69.03	
I 31	DEVELOP MID-RANGE PLANS	14.57	0.93	0.13	69.17	
I 59	INSPECT UNIT MAIL ROOM	9.61	1.38	0.13	69.30	235
J 3	MONITOR MAINTENANCE TECHNICAL TRAINING PROGRAM	12.25	1.09	0.13	69.43	
J 21	PREPARE MAINTENANCE RELATED CORRESPONDENCE	11.47	1.16	0.13	69.56	
N 4	ASSIGN MISSIONS/OBJECTIVES TO UNIT	18.14	0.74	0.13	69.69	
O 56	CONDUCT DESERT OPERATIONS	18.29	0.72	0.13	69.83	
P 13	DETERMINE CLASSIFIED DOCUMENTS TO BE DESTROYED	9.30	1.42	0.13	69.96	240
P 33	WITNESS CLASSIFIED DOCUMENT DESTRUCTION REPORTS	8.99	1.48	0.13	70.09	
R 27	CONDUCT AIR TO AIR TACTICS TRAINING	8.52	1.56	0.13	70.22	
I 20	DRAFT NON MILITARY CORRESPONDENCE	14.42	0.91	0.13	70.35	
H 32	PREPARE DUTY ROSTERS	15.66	0.84	0.13	70.48	
A 8	CONDUCT TACTICAL MARCHES	21.86	0.59	0.13	70.61	245
N 3	ADVISE COMMANDING OFFICER OF ANY CHANGES TO TACTICAL SITUATION	20.31	0.64	0.13	70.73	
P 6	CONTROL ACCESS TO AREAS/FACILITIES	12.71	1.01	0.13	70.86	
P 12	ENFORCE UNIT PHYSICAL SECURITY	12.09	1.08	0.13	70.99	
P 15	EXPLAIN SECURITY STANDARDS TO PERSONNEL	12.87	1.01	0.13	71.12	
Q 15	INSTRUCT TRAIN PERSONNEL IN LAND NAVIGATION PROCEDURES	21.39	0.61	0.13	71.25	250
I 23	EDIT WRITTEN DRAFTS FOR PUBLICATION	9.92	1.28	0.12	71.37	
I 36	CONDUCT MEETINGS AND CONFERENCES	14.73	0.84	0.12	71.49	
B 11	INSTRUCT/TRAIN PERSONNEL IN WEAPONS MAINTENANCE TECHNIQUES	20.15	0.62	0.12	71.62	
I 66	PREPARE ACCIDENT REPORTS	12.71	0.98	0.12	71.74	
J 41	VERIFY COMPLETION OF EROS AND ACCOMPANYING RECORDS FOR EQUIPMENT BEING INDUCTED INTO REPAIR ACTIVITY	13.33	0.95	0.12	71.87	255
A 40	SCORE TESTS	14.88	0.84	0.12	71.99	
O 70	CALL FOR FIRE SUCH AS MORTAR, ARTILLERY AND FORWARD AIR CONTROL	15.35	0.83	0.12	72.11	
G 34	REVIEW DISCIPLINARY ACTIONS	10.38	1.20	0.12	72.24	
D 21	PREPARE CAMOUFLAGE COVERINGS	19.53	0.62	0.12	72.36	
J 2	INSTRUCT TRAIN PERSONNEL PERFORMING MAINTENANCE MANAGEMENT DUTIES	13.64	0.90	0.12	72.48	260
J 18	MAINTAIN PUBLICATIONS IN A TECHNICAL LIBRARY	15.04	0.80	0.12	72.60	
H 33	PREPARE INPUTS TO MANPOWER REPORTS OR DOCUMENTS	11.32	1.09	0.12	72.72	
J129	OBLIGATE FUNDS	7.13	1.71	0.12	72.84	
B 9	INSTRUCT/TRAIN PERSONNEL IN WEAPONS FIRING TECHNIQUES	21.39	0.56	0.12	72.96	
I 18	INITIATE TELEPHONE RECALL	14.88	0.81	0.12	73.08	265
I 28	DEVELOP GOALS OR OBJECTIVES FOR FUTURE OR LONG-TERM OPERATIONS	15.50	0.76	0.12	73.19	
I 40	ARRANGE SPEAKING/LECTURE ENGAGEMENTS	8.84	1.32	0.12	73.31	
I 75	REVIEW AFTER ACTION REPORTS	14.73	0.79	0.12	73.43	
F 30	OPERATE WIRE TELEPHONE NET	18.29	0.64	0.12	73.54	
J 71	ESTABLISH PROCEDURES FOR CONTROL OF TOOLS AND TEST EQUIPMENT	12.71	0.92	0.12	73.66	270
O 64	CONDUCT SMALL UNIT TACTICAL TRAINING	18.29	0.64	0.12	73.77	
C 3	INSTRUCT/TRAIN PERSONNEL IN WEARING/MAINTENANCE OF PROTECTIVE MASKS	21.39	0.53	0.11	73.89	

D-TSK	TASK TITLE	%	%	%	%	N
J 37	MONITOR MODIFICATION PROGRAMS	11.94	0.96	0.11	74.00	
J 80	INSPECT EQUIPMENT RECORDS FOR COMPLETENESS/ACCURACY	11.94	0.96	0.11	74.11	
I 11	RESPOND TO REQUEST FROM CIVIL ORGANIZATIONS	13.64	0.83	0.11	74.22	275
G 18	APPREHEND PERSONNEL	21.24	0.53	0.11	74.33	
K 6	CONDUCT INFORMAL GUARD MOUNTS	20.00	0.56	0.11	74.45	
N 9	WRITE FRAG ORDERS	17.05	0.68	0.11	74.56	
O 63	PLAN SMALL UNIT TACTICAL TRAINING	18.29	0.62	0.11	74.67	
O 66	RECOMMEND COURSES OF ACTION TO COMPANY BATTALION COMMANDER AS SITUATION CHANGES	18.45	0.63	0.11	74.78	280
H 26	INITIATE PERSONNEL ACTION REQUESTS	17.67	0.65	0.11	74.89	
B 14	PREPARE/SUBMIT MARKSMANSHIP TRAINING REPORTS	11.00	1.05	0.11	75.01	
H 5	PARTICIPATE IN PERSONNEL BOARDS SUCH AS AWARDS. CLASSIFICATION. OR RELIABILITY BOARDS	17.52	0.62	0.11	75.11	
J 6	SUPERVISE MAINTENANCE SAFETY PROGRAM	10.23	1.06	0.11	75.22	
J 38	MONITOR CALIBRATION PROGRAMS	12.87	0.87	0.11	75.33	285
J 45	VERIFY ENTRIES IN EQUIPMENT RECORDS UPON COMPLETION OF MAINTENANCE	9.92	1.11	0.11	75.44	
G 26	PARTICIPATE AS MEMBER OF COURTS-MARTIAL	18.91	0.58	0.11	75.55	
J126	MANAGE UNIT FUND	8.99	1.22	0.11	75.65	
J137	REVIEW UNIT FUND RECORDS	7.60	1.42	0.11	75.76	
J148	PREPARE EQUIPMENT CUSTODY RECORD ECR CARDS	14.42	0.76	0.11	75.87	290
G 1	ADMINISTER ARTICLE 15'S (NJP). UCMJ (OFFICE HOURS)	12.71	0.87	0.11	75.98	
A 16	DEVELOP TESTS FOR PERSONNEL	15.66	0.68	0.10	76.08	
B 20	INSTRUCT/TRAIN PERSONNEL IN SAFETY PROCEDURES WHEN HANDLING AND FIRING INDIVIDUAL WEAPONS	20.15	0.52	0.10	76.19	
E 1	CONDUCT CREW-SERVED WEAPONS FIRING EXERCISES	17.21	0.62	0.10	76.29	
J109	DEVELOP REVIEW BUDGET	7.13	1.50	0.10	76.39	295
J123	JUSTIFY LOCAL PURCHASE OF ITEMS FROM CIVILIAN SOURCES	10.08	1.05	0.10	76.50	
J135	REVIEW BUDGET EXPENDITURES	7.44	1.45	0.10	76.60	
K 16	PREPARE INSPECTION REPORTS	11.00	0.95	0.10	76.71	
O 60	EXECUTE OPERATIONAL ORDER OF HIGHER ECHELON	14.88	0.72	0.10	76.81	
O 65	ASSIGN MISSION OBJECTIVE TO SQUAD PLATOON SIZE UNIT	17.67	0.60	0.10	76.91	300
O 73	IMPLEMENT CAMOUFLAGE PROCEDURES FOR INDIVIDUAL EQUIPMENT. VEHICLES OR PERSONNEL	17.21	0.60	0.10	77.02	
B 8	PREPARE/SUBMIT AMMO REQUEST	18.60	0.57	0.10	77.12	
H 22	RECOMMEND PERSONNEL FOR SPECIAL DUTY ASSIGNMENT SUCH AS DI AND RECRUITING DUTY	20.00	0.52	0.10	77.23	
R 29	OPERATE AIRCRAFT ON AIR COMBAT MANUVER RANGE	7.28	1.44	0.10	77.33	
J 19	REQUISITION TECHNICAL PUBLICATIONS	14.88	0.69	0.10	77.43	305
J 30	PREPARE TACTICAL EQUIPMENT REPAIR ORDER (ERO)	13.95	0.72	0.10	77.53	
J 44	VERIFY ENTRIES IN SHOP RECORDS UPON COMPLETION OF MAINTENANCE	9.61	1.04	0.10	77.63	
J 89	DIRECT GROUND SAFETY PROGRAMS	7.13	1.44	0.10	77.73	
I 6	WORK DEPLOYMENT CHECKLISTS	14.42	0.69	0.10	77.83	
O 2	ANALYZE MISSION TO DETERMINE DEDUCED IMPLIED MISSIONS	15.35	0.67	0.10	77.93	310
G 19	ASSIGN PERSONNEL TO RESTRICTION	14.42	0.70	0.10	78.03	

D-TSK	TASK TITLE	%	%	% ****	%	N
P 14	EVALUATE SECURITY OR CUSTODIAL PROCEDURES	8.52	1.22	0.10	78.13	
P 16	IDENTIFY DEVIATIONS FROM SECURITY STANDARDS	10.38	1.00	0.10	78.23	
C 8	COORDINATE WITH NBC PERSONNEL FOR TRAINING OF PERSONNEL IN DECONTAMINATION PROCEDURES	14.11	0.73	0.10	78.33	
E 4	DEVELOP DEFENSIVE FIRE SUPPORT PLAN	16.90	0.61	0.10	78.43	315
Q 13	CALIBRATE COMPASS	14.42	0.72	0.10	78.53	
Q 14	ORIENT AERIAL PHOTO TO MILITARY MAP	16.90	0.60	0.10	78.63	
D 22	EMPLACE CAMOUFLAGE COVERINGS	17.52	0.58	0.10	78.73	
J 66	INITIATE FOLLOW UP ACTION ON REPAIR PARTS REQUISITIONS	9.46	1.02	0.10	78.83	
J 90	DEVELOP PLANS TO IMPROVE SAFETY PRACTICES	7.28	1.36	0.10	78.92	320
I 55	ESTABLISH SUSPENSE DATES FOR SCHEDULES, REPORTS, AND GENERAL CORRESPONDENCE	8.06	1.20	0.10	79.02	
C 135	SUPERVISE NBC TRAINING OF PERSONNEL	14.42	0.68	0.10	79.11	
J132	PLAN FOR REPLACEMENT PURCHASE OF EQUIPMENT	8.84	1.12	0.10	79.21	
J134	REGULATE BUDGETARY EXPENDITURES	6.66	1.50	0.10	79.31	
G 14	CONDUCT FORMAL JAG INVESTIGATIONS	12.87	0.77	0.10	79.40	325
K 15	CONDUCT GROUND SAFETY INSPECTIONS	8.52	1.14	0.10	79.50	
C 12	SUPERVISE PERSONNEL PERFORMING NBC DUTIES	12.40	0.78	0.10	79.59	
L 19	IMPLEMENT PROGRAMS TO PUBLICIZE UNIT OR INDIVIDUAL ACHIEVEMENTS	12.87	0.76	0.10	79.69	
L 27	REVIEW FITNESS REPORTS	10.54	0.93	0.10	79.79	
G 28	PREPARE COURTS MARTIAL CHARGES SPECIFICATION DOCUMENTATION	6.82	1.45	0.10	79.88	330
N 8	WRITE ANNEXES FOR CONTINGENCY PLANS OR OPERATION ORDERS	13.33	0.72	0.10	79.98	
O 18	CONSOLIDATE AN OBJECTIVE	15.50	0.63	0.10	80.07	
O 37	PLAN FOR USE OF CREW SERVED WEAPONS	16.28	0.60	0.10	80.17	
O 59	EMPLOY VISUAL COMMUNICATIONS SUCH AS PYROTECHNICS, LIGHTS AND OTHER PREARRANGED METHODS	19.69	0.49	0.10	80.27	
P 2	APPROVE DISAPPROVE ACCESS TO CLASSIFIED MATERIALS	8.37	1.15	0.10	80.36	335
R 1	ARRANGE FOR AIR TRANSPORTATION	8.52	1.15	0.10	80.46	
A 25	INSTRUCT/TRAIN PERSONNEL ON FIVE PARAGRAPH/OPERATION ORDER	17.98	0.54	0.10	80.55	
G 22	DOCUMENT JUDICIAL PUNISHMENT ACTIONS	8.22	1.20	0.10	80.65	
R 26	CONDUCT AIR TO AIR REFUELING	6.04	1.60	0.10	80.75	
J 95	APPROVE CERTIFY INVENTORY ADJUSTMENTS	8.52	1.10	0.09	80.84	340
J122	JUSTIFY BUDGET REQUESTS	10.38	0.90	0.09	80.93	
G 27	PREPARE CONFINEMENT ORDERS	8.99	1.05	0.09	81.02	
L 21	INSTRUCT PERSONNEL ON TROOP LEADING STEPS	17.21	0.54	0.09	81.11	
O 1	EMPLOY VISUAL COMMUNICATIONS MEANS SUCH AS SMOKE, FLAGS AND HAND AND ARM SIGNALS	17.98	0.52	0.09	81.21	
O 49	PREPARE FIRE PLAN SKETCH	16.28	0.58	0.09	81.30	345
D 17	SELECT/ORGANIZE A BIVOUAC SITE	18.76	0.50	0.09	81.39	
C 7	COORDINATE WITH NBC PERSONNEL FOR TRAINING IN USE OF SPECIAL EQUIPMENT TO IDENTIFY/DETECT CHEMICAL AGENTS	13.64	0.70	0.09	81.48	
C 4	INSTRUCT/TRAIN PERSONNEL ON INDICATIONS OF NBC ATTACK	17.98	0.52	0.09	81.57	
H 24	IMPLEMENT ANNUAL LEAVE PROGRAM	13.64	0.66	0.09	81.66	
J 47	MONITOR CONTROLLED ITEMS PROGRAM	8.06	1.12	0.09	81.75	350
J 63	SCREEN REPAIR PARTS REQUISITIONS FOR ACCURACY	9.46	0.97	0.09	81.84	

D-TSK	TASK TITLE	%	%	% ****	%	N
G 11	STOW/ACCOUNT FOR EVIDENCE	12.87	0.69	0.09	81.93	
I 80	PREPARE/UPDATE COMMAND CHRONOLOGY	10.08	0.89	0.09	82.01	
J 96	ASSIGN PRIORITIES TO REQUISITIONS	10.85	0.81	0.09	82.10	
J110	DETERMINE LOGISTIC SUPPORT REQUIREMENTS	12.40	0.71	0.09	82.19	355
K 3	INSPECT SAFETY MATERIALS OR EQUIPMENT	10.38	0.86	0.09	82.28	
C 1	INSTRUCT/TRAIN PERSONNEL ON THE EFFECTS OF A NUCLEAR DETONATION	16.43	0.54	0.09	82.37	
N 7	RECOMMEND CHANGES TO DEFENSIVE POSITION AS SITUATION CHANGES	14.88	0.60	0.09	82.45	
O 19	CONDUCT A NIGHT ATTACK	15.35	0.58	0.09	82.54	
O 34	ORGANIZE LOCAL SECURITY IN DEFENSIVE POSITION	15.35	0.59	0.09	82.63	360
O 36	DEVELOP A PLAN OF DEFENSE	15.50	0.59	0.09	82.72	
C 2	INDOCTRINATE PERSONNEL IN PROTECTIVE MEASURES FOR BLAST, HEAT AND NUCLEAR RADIATION	16.59	0.53	0.09	82.81	
D 19	CONDUCT ROUTE RECONNAISSANCE	17.36	0.52	0.09	82.89	
I 46	APPROVE ORDERS/DIRECTIVES FOR PUBLICATION	8.99	0.96	0.08	82.98	
H 40	REVIEW UTILIZE UNIT MANNING REPORT	9.30	0.94	0.08	83.06	365
J 69	SUPERVISE STOCKING OF PRE-EXPENDED BINS	8.06	1.04	0.08	83.15	
A 46	CONDUCT STAFF ASSISTANCE VISITS	10.08	0.85	0.08	83.23	
J133	PROMOTE SELF-HELP PROGRAMS	7.28	1.18	0.08	83.31	
J143	SUPERVISE PERSONNEL LOADING/UNLOADING CARGO AND EQUIPMENT FOR EMBARKATION	11.62	0.73	0.08	83.40	
G 15	CONDUCT PRELIMINARY INQUIRIES	13.33	0.64	0.08	83.48	370
G 31	PREPARE REQUESTS FOR COURTS-MARTIAL	7.75	1.13	0.08	83.57	
A 4	ANALYZE THE CURRENT POLITICAL/ECONOMIC CRISIS AREAS IN RELATION TO THE MARINE CORPS MISSION	10.54	0.81	0.08	83.65	
O 10	DETERMINE ATTACK FORMATIONS	14.73	0.58	0.08	83.73	
O 62	DEVELOP FIRE SUPPORT PLAN FOR PLATOON/COMPANY SIZE UNIT IN THE ATTACK/DEFENSE	13.95	0.62	0.08	83.82	
I 26	DEVELOP FLOW CHARTS	11.00	0.78	0.08	83.90	375
P 36	CONDUCT RECOGNITION TRAINING	8.99	0.96	0.08	83.99	
R 5	DIRECT/CORRECT CLOSE AIR SUPPORT	8.99	0.96	0.08	84.07	
H 2	ESTABLISH EMERGENCY RECALL PROCEDURES	16.43	0.52	0.08	84.15	
J 31	RECORD MAINTENANCE PERFORMED AND REPAIR PARTS USED ON TACTICAL EQUIPMENT REPAIR ORDER (ERO)	9.76	0.82	0.08	84.23	
J 92	ALLOCATE FACILITIES, EQUIPMENT, OR OTHER ACCOUNTABLE RESOURCES	7.44	1.11	0.08	84.31	380
J 94	ANALYZE PROPOSED BUDGET CHANGES	7.28	1.12	0.08	84.39	
J 5	PREPARE SAFETY INSPECTION CHECKLIST	8.37	0.96	0.08	84.47	
O 11	CONDUCT A FRONTAL ATTACK	14.57	0.57	0.08	84.55	
O 51	INSTRUCT/TRAIN PERSONNEL IN DESERT OPERATIONS	15.97	0.52	0.08	84.63	
O 61	DEVELOP SCHEME OF MANEUVER FOR PLATOON COMPANY SIZE UNIT IN THE ATTACK/DEFENSE	13.49	0.60	0.08	84.71	385
B 19	INSTRUCT/TRAIN PERSONNEL IN THE TECHNIQUES OF APPLYING IMMEDIATE ACTION FOR STOPPAGES OF INDIVIDUAL WEAPONS	17.36	0.47	0.08	84.79	
J 70	COMPLETE CONSOLIDATED MEMO RECEIPT (CMR) TO ACCOUNT FOR INVENTORY OF SHOP EQUIPMENT	9.46	0.80	0.08	84.87	

D-TSK	TASK TITLE	%	%	% ****	%	N
J 88	EVALUATE UNIT GROUND SAFETY PROGRAMS	6.51	1.22	0.08	84.95	
H 25	IMPLEMENT MANPOWER POLICIES	8.68	0.90	0.08	85.02	
J139	CONDUCT SUPPLY RESEARCH	8.22	0.96	0.08	85.10	390
J144	SUPERVISE UNIT EMBARKATION OF SHIP/AIRCRAFT	10.85	0.70	0.08	85.17	
B 5	INSPECT AMMUNITION (AMMO) FOR DEFECT/DAMAGE	15.97	0.49	0.08	85.25	
H 45	PREPARE UNIT PUNISH BOOK (UPB)	6.66	1.15	0.08	85.33	
O 17	USE TACTICAL CONTROL MEASURES TO COORDINATE MOVEMENT OF UNITS	14.57	0.53	0.08	85.40	
P 11	DIRECT SECURITY FUNCTIONS	6.36	1.25	0.08	85.48	395
P 26	INITIATE REQUEST FOR SECURITY CLEARANCES	9.30	0.84	0.08	85.55	
P 30	REPORT SECURITY VIOLATIONS	10.38	0.76	0.08	85.63	
D 18	CONDUCT RECONNAISSANCE TO DETERMINE SECURITY REQUIREMENTS FOR BIVOUAC SITE	15.04	0.51	0.08	85.71	
R 4	CALL FOR CLOSE AIR SUPPORT	11.78	0.66	0.08	85.78	
J 16	MAINTAIN PUBLICATIONS CONTROL SYSTEM TO REFLECT AUTHORIZED MAINTENANCE PUBLICATIONS	11.16	0.69	0.08	85.86	400
H 3	PREPARE/REVIEW REPLIES TO PERSONAL INQUIRIES	10.23	0.77	0.08	85.93	
J 98	PARTICIPATE IN BUDGET MEETINGS	8.68	0.85	0.07	86.01	
C 6	SUPERVISE PERSONNEL PERFORMING DECONTAMINATION DUTIES	10.23	0.73	0.07	86.08	
J 35	PREPARE ERO SHOPPING LIST	9.14	0.82	0.07	86.15	
I 37	AUTHENTICATE ORDERS	7.28	0.99	0.07	86.22	405
I 70	REVIEW TELEPHONE TOLL TICKETS FOR PRECEDENCE ABUSE OR UNAUTHORIZED TRAFFIC	8.99	0.83	0.07	86.29	
O 23	CONDUCT MECHANIZED TACTICS	14.11	0.52	0.07	86.37	
H 42	SUPERVISE CIVILIAN PERSONNEL	3.41	2.15	0.07	86.44	
J 64	PREPARE REQUISITIONS FOR REPAIR PARTS	7.60	0.95	0.07	86.51	
E 2	CONSULT WITH THE FORWARD OBSERVER IN UTILIZING ARTILLERY FIRE SUPPORT	10.08	0.72	0.07	86.58	410
J 14	REVIEW RECOMMENDED CHANGES TO THE UNIT TABLE OF ALLOWANCE (T/A) FOR PUBLICATION	11.94	0.62	0.07	86.65	
P 4	AUTHENTICATE OR VERIFY ENTRY AUTHORITY LISTS	7.28	1.00	0.07	86.72	
P 10	DEVELOP PLANS TO IMPROVE SECURITY PROGRAMS	6.20	1.16	0.07	86.80	
P 23	ORGANIZE UNIT PHYSICAL SECURITY	8.06	0.90	0.07	86.87	
A 19	DIRECT PERSONNEL IN HELICOPTER ENPLANEING DEPLANEING PROCEDURES	14.57	0.50	0.07	86.94	415
I 64	PREPARE ACTION BRIEFS/POINT PAPERS	10.08	0.75	0.07	87.01	
G 37	PREPARE RACIAL INCIDENT REPORTS	7.90	0.90	0.07	87.08	
J138	SUPERVISE IMPLEMENTATION OF BUDGET SYSTEM	4.80	1.42	0.07	87.15	
J156	REQUEST BUDGET CHANGES	7.28	0.94	0.07	87.22	
K 1	WRITE INSPECTION GUIDELINES, SUCH AS CHECKLISTS	10.38	0.65	0.07	87.28	420
I 12	PREPARE RESPONSES TO CONGRESSIONAL INQUIRIES	9.76	0.70	0.07	87.35	
B 3	INSPECT THE M-60/M-60E2 MACHINEGUN FOR SERVICEABILITY	12.87	0.55	0.07	87.42	
H 44	VERIFY UNIT TRANSACTION REGISTER (UTR)	5.12	1.36	0.07	87.49	
C 5	INSTRUCT/TRAIN PERSONNEL IN CONTAMINATION/DECONTAMINATION PROCEDURES	13.33	0.52	0.07	87.56	
O 12	CONDUCT A SINGLE ENVELOPMENT	13.33	0.53	0.07	87.62	425

D-TSK	TASK TITLE	%	%	% ****	%	N
I 14	PARTICIPATE IN ADVISORY BOARDS OR COUNCIL MEETINGS	8.52	0.84	0.07	87.69	
E 3	CONTROL FIRES OF A UNIT IN THE DEFENSE	12.09	0.59	0.07	87.76	
J 91	ADJUST REQUISITION PRIORITIES	8.22	0.87	0.07	87.83	
D 28	SUPERVISE PERSONNEL CONSTRUCTING EMPLACEMENTS. BUNKERS. AND SHELTERS	14.11	0.50	0.07	87.90	
C 16	INSTRUCT TRAIN PERSONNEL IN ALARMS SIGNALS USED IN NBC DEFENSE	14.11	0.48	0.07	87.96	430
I 34	CONDUCT BOARDS. COUNCILS OR CONFERENCES	10.54	0.66	0.07	88.03	
J116	ENFORCE LIMITS OF AUTHORIZED MAINTENANCE	8.84	0.75	0.06	88.10	
I 35	CONDUCT LIAISON WITH CIVILIAN AGENCIES	8.06	0.81	0.06	88.16	
J140	REVIEW SUPPLY REQUIREMENTS FOR DEPLOYMENT	9.14	0.73	0.06	88.22	
H 20	CONDUCT CAREER PLANNING PROGRAM	8.99	0.73	0.06	88.29	435
A 20	EMPLOY WATER SURVIVAL TECHNIQUES	12.09	0.53	0.06	88.35	
K 12	ORGANIZE MILITARY CEREMONIAL FUNCTIONS. SUCH AS DINING-INS. RETIREMENTS. OR AWARDS AND DECORATIONS CEREMONIES	8.37	0.77	0.06	88.42	
J 8	MONITOR THE FINANCIAL STATUS OF MAINTENANCE ACTIVITY	6.82	0.95	0.06	88.48	
O 6	CONDUCT LANDINGS IN AMPHIBIAN VEHICLES	14.26	0.45	0.06	88.54	
J 12	REVIEW RECOMMENDED CHANGES TO THE UNIT TABLE OF EQUIPMENT (T/E)	11.32	0.58	0.06	88.61	440
O 41	ORGANIZE/CONDUCT COMBAT/RECONNAISSANCE PATROLS	12.87	0.50	0.06	88.67	
J 13	SUBMIT RECOMMENDED CHANGES TO THE UNIT T/E	11.16	0.58	0.06	88.74	
J 46	MANAGE QUALITY ASSURANCE AND CONTROL PROGRAMS	6.04	1.09	0.06	88.80	
P 7	CONDUCT SECURITY PROGRAM INSPECTIONS	7.75	0.85	0.06	88.86	
P 34	PREPARE EMERGENCY DESTRUCTION PLAN	6.82	0.99	0.06	88.93	445
B 18	INSTRUCT/TRAIN PERSONNEL IN THE TECHNIQUES OF FIELD STRIPPING INDIVIDUAL WEAPONS	15.19	0.44	0.06	88.99	
A 42	SUPERVISE PERSONNEL IN THE OPERATION OF THE M-60/M-60E2 MACHINE GUN	14.42	0.46	0.06	89.06	
J 15	SUBMIT RECOMMENDED CHANGES TO THE UNIT T/A	10.54	0.64	0.06	89.12	
R 2	DETERMINE NUMBER OF HELICOPTERS NEEDED TO SUPPORT OPERATIONS	8.84	0.75	0.06	89.18	
J 17	MONITOR INTERNAL DISTRIBUTION OF MAINTENANCE PUBLICATIONS TO UNITS TECHNICAL LIBRARY	8.68	0.77	0.06	89.25	450
A 28	MONITOR DRIVER TRAINING	8.22	0.82	0.06	89.31	
I 21	DRAFT STAFF STUDIES OR SPECIAL STUDIES OR ANALYSES	6.66	1.00	0.06	89.38	
K 5	CONDUCT FORMAL GUARD MOUNTS	12.25	0.51	0.06	89.44	
K 18	PREPARE BUILDINGS AND GROUNDS REPORT	4.80	1.30	0.06	89.50	
G 25	PREPARE SERIOUS INCIDENT REPORTS	9.61	0.63	0.06	89.56	455
L 18	IMPLEMENT AFFIRMATIVE ACTION PLAN	6.82	0.88	0.06	89.62	
J 7	PREPARE BUDGET ESTIMATES FOR MAINTENANCE ACTIVITY	7.28	0.86	0.06	89.68	
M 20	INSPECT COOKING UTENSILS FOR CLEANLINESS	7.75	0.78	0.06	89.74	
J 72	PREPARE FORMS NECESSARY FOR DISPOSAL OF EXCESS AND UNSERVICEABLE SHOP EQUIPMENT	7.44	0.81	0.06	89.80	
A 26	INSTRUCT TRAIN PERSONNEL ON MARKSMANSHIP WITH INDIVIDUAL WEAPONS	12.40	0.49	0.06	89.86	460
J 62	MANAGE MAINTENANCE SHOP SUPPLY FUNCTIONS	5.74	1.08	0.06	89.92	
O 54	CONDUCT COLD WEATHER OPERATIONS	9.14	0.67	0.06	89.98	

D-TSK	TASK TITLE	%	%	% ****	%	N
A 41	SUPERVISE PERSONNEL IN ASSEMBLY/DISASSEMBLY OF THE M-60/M-60E2 MACHINE GUN	12.56	0.48	0.06	90.04	
P 8	CONDUCT COLLECTION AND REPORTING OF INTELLIGENCE INFORMATION	4.80	1.30	0.06	90.10	
E 10	REQUEST CLOSE AIR SUPPORT STRIKES	10.70	0.57	0.06	90.16	465
P 19	PREPARE CLASSIFIED DOCUMENTS FOR RETIREMENT	2.79	2.16	0.06	90.22	
F 8	TROUBLESHOOT RADIO CIRCUITS	7.28	0.83	0.06	90.28	
Q 16	EVALUATE LAND NAVIGATION OPERATIONS	10.70	0.59	0.06	90.34	
R 100	BSERVE/REPORT ON RESULTS OF AIR STRIKES	7.60	0.82	0.06	90.40	
J 34	CLOSE OUT ERO	8.22	0.75	0.06	90.46	470
J112	DIRECT LOADING/UNLOADING ON AIRCRAFT	6.82	0.94	0.06	90.52	
B 7	SUPERVISE PERSONNEL ISSUING AMMO	13.49	0.44	0.06	90.57	
J102	COMPILE BUDGETARY BACKGROUND INFORMATION	5.42	1.09	0.06	90.63	
J 51	MONITOR ADMINISTRATIVE DEADLINE PROGRAM	6.51	0.87	0.06	90.68	
L 17	IMPLEMENT EQUAL OPPORTUNITY PROGRAM	7.75	0.76	0.06	90.74	475
G 38	PLACE PERSONNEL ON LEGAL HOLD	6.20	0.96	0.06	90.80	
N 2	DEVELOP CONTINGENCY PLANS	8.99	0.62	0.06	90.85	
J 28	REVIEW AIS REPORT FOR STATUS/PROGRESSION THROUGH MAINTENANCE/SUPPLY PROCESS	5.89	0.97	0.06	90.91	
O 9	ORGANIZE APPROACH MARCH FORMATIONS BASED UPON TACTICAL SITUATION	11.78	0.50	0.06	90.96	
J 73	ASSIST IN PREPARATION OF SOP FOR MAINTENANCE MANAGEMENT	6.82	0.88	0.06	91.02	480
C 9	PREPARE NBC-1 REPORTS (INITIAL AND FOLLOW-UP DATA)	8.99	0.66	0.06	91.08	
O 42	CRAWL/TIP TOE THROUGH THE TULIPS	6.82	0.84	0.06	91.13	
J 20	ISSUE TECHNICAL PUBLICATIONS TO MAINTENANCE PERSONNEL	8.52	0.67	0.06	91.19	
E 6	EMPLOY ANTI-MECHANIZED WEAPONS IN A DEFENSIVE POSITION	11.47	0.50	0.06	91.24	
J 55	CONDUCT UNIT MAINTENANCE MANAGEMENT INSPECTIONS	6.98	0.81	0.06	91.30	485
J 27	MONITOR AIS REPORT FOR VALIDITY OF INPUT	5.89	0.96	0.06	91.36	
Q 8	NAVIGATE USING CELESTIAL METHOD (STARS/MOON/SUN)	8.37	0.69	0.06	91.41	
B 21	INSTRUCT/TRAIN PERSONNEL IN RIFLE RANGE SAFETY	13.49	0.44	0.06	91.47	
Q 20	CONDUCT NIGHT COMPASS MARCHES	12.09	0.48	0.06	91.52	
J 56	ASSIST UNITS IN CORRECTION OF MAINTENANCE MANAGEMENT PROBLEMS	5.42	1.06	0.06	91.58	490
J103	PREPARE REPORT OF EQUIPMENT SURVEY	4.34	1.20	0.05	91.63	
A 48	COMPILE TESTING AND EVALUATION DATA	6.82	0.79	0.05	91.68	
H 9	DEVELOP ORGANIZATIONAL CHARTS	9.61	0.56	0.05	91.74	
J 23	MONITOR MARES REPORT FOR VALIDITY OF INPUT	5.74	0.94	0.05	91.79	
O 5	CONDUCT LANDINGS IN LANDING CRAFT	13.95	0.39	0.05	91.84	495
J118	ESTABLISH VEHICLE CONTROL PROGRAMS	5.74	0.95	0.05	91.89	
O 8	ESTABLISH LANDING ZONE SECURITY	11.16	0.46	0.05	91.94	
J104	CONDUCT/COORDINATE QUARTERLY/MID-YEAR BUDGET REVIEW	4.50	1.20	0.05	92.00	
O 20	CONDUCT A SINGLE AXIS INFANTRY/ARMOR ATTACK	11.32	0.47	0.05	92.05	
O 22	CONDUCT AN DAY ARMOR ATTACK	10.70	0.50	0.05	92.10	500
O 29	DETERMINE A TACTICAL LANDING ZONE	9.76	0.54	0.05	92.15	
J119	ESTABLISH VEHICLE REQUIREMENTS	7.28	0.75	0.05	92.20	
O 47	PARTICIPATE IN RESCUE/EVACUATION OPERATIONS	7.60	0.72	0.05	92.26	
P 5	CONDUCT INTELLIGENCE BRIEF/DEBRIEF	4.96	1.10	0.05	92.31	

D-TSK	TASK TITLE	%	%	% ****	%	N
J 65	PREPARE REQUISITIONS FOR SHOP EQUIPMENT AND SPECIAL TOOLS	6.20	0.89	0.05	92.36	505
J 25	REVIEW MARES REPORT FOR STATUS/PROGRESSION THROUGH, MAINTENANCE/SUPPLY PROCESS	5.89	0.95	0.05	92.41	
P 35	REQUEST LOCAL RECORDS CHECK (LRC)	5.12	1.09	0.05	92.46	
A 12	CONDUCT HAND GRENADE LIVE FIRE EXERCISES	14.73	0.36	0.05	92.52	
B 6	SUPERVISE PERSONNEL INVENTORYING AMMO	11.00	0.49	0.05	92.57	
B 26	DIRECT INDIVIDUAL WEAPONS FIRING OPERATIONS	12.40	0.44	0.05	92.62	510
F 1	COUNTERACT IMITATIVE AND MANIPULATIVE DECEPTION	8.52	0.57	0.05	92.67	
M 24	INSPECT PERSONNEL FOR CARE OF FEET	14.11	0.36	0.05	92.72	
O 30	ORGANIZE AND STAGE HELITEAMS	12.40	0.42	0.05	92.76	
O 46	CONDUCT RETROGRADE OPERATIONS	10.85	0.45	0.05	92.81	
O 50	INSTRUCT TRAIN PERSONNEL IN COLD WEATHER OPERATIONS	11.32	0.43	0.05	92.86	515
J142	PREPARE EMBARKATION TIME STUDY WORKSHEET/PLAN	5.27	0.92	0.05	92.91	
J 74	PREPARE SOP FOR MAINTENANCE MANAGEMENT	4.50	1.09	0.05	92.96	
P 17	ASSIGN SECURITY CLASSIFICATION TO DOCUMENTS	4.34	1.13	0.05	93.00	
Q 10	CORRECT MAPS	8.84	0.55	0.05	93.05	
J 77	PREPARE MAINTENANCE SCHEDULES	6.04	0.81	0.05	93.10	520
E 5	DIRECT THE APPLICATION OF IMMEDIATE ACTION TO CREW-SERVED WEAPONS	9.76	0.50	0.05	93.15	
A 43	SUPERVISE PERSONNEL IN THE ORGANIZATION OF A HELICOPTER LANDING ZONE	12.40	0.41	0.05	93.20	
E 7	EMPLOY ANTI-MECHANIZED WEAPONS IN THE OFFENSIVE/DEFENSIVE FIRE SUPPORT PLAN	9.76	0.50	0.05	93.24	
M 25	INSTRUCT/TRAIN PERSONNEL IN FOOT CARE TECHNIQUES	11.62	0.39	0.04	93.29	
J114	DRIVE TACTICAL VEHICLES	6.51	0.70	0.04	93.33	525
O 3	WRITE COMBAT REPORTS	8.37	0.53	0.04	93.38	
A 2	ADMINISTER FUNDING FOR EDUCATIONAL PROGRAMS	4.65	0.95	0.04	93.42	
O 16	PLAN A TACTICAL MOTOR MARCH	9.92	0.47	0.04	93.46	
L 6	ESTABLISH/MAINTAIN COMMUNITY RELATIONS	4.34	1.09	0.04	93.51	
F 2	COUNTERACT SPOT AND BARRAGE JAMMING	8.22	0.57	0.04	93.55	530
O 38	ESTABLISH A BLOCKING POSITION	10.38	0.44	0.04	93.60	
C 18	INSTRUCT/TRAIN PERSONNEL IN FIRST AID FOR NBC	10.08	0.46	0.04	93.64	
O 58	CONDUCT RAPPELING OPERATIONS	10.70	0.44	0.04	93.68	
J 22	PREPARE INPUT TO MAINTENANCE AND READINESS EVALUATION SYSTEM (MARES) REPORT	5.27	0.88	0.04	93.73	
I 4	WRITE LECTURES OR SPEECHES	6.04	0.73	0.04	93.77	535
R 8	SET UP GAIL LIGHTING SYSTEM	5.27	0.86	0.04	93.82	
I 50	DRAFT INPUTS FOR PUBLICATIONS SUCH AS NEWSPAPERS OR HISTORIES	4.65	1.00	0.04	93.86	
J117	ESTABLISH, REVIEW OR REVISE STOCK LEVELS	4.80	0.94	0.04	93.90	
J131	PREPARE REQUESTS FOR NON-APPROPRIATED FUND ITEMS	4.96	0.95	0.04	93.95	
C 20	INSTRUCT TRAIN PERSONNEL FOR NBC DEFENSE TEAMS	7.28	0.63	0.04	93.99	540
N 1	EVALUATE ALERT, EMERGENCY, OR CONTINGENCY PLANS	6.98	0.63	0.04	94.03	
J 99	AUTHORIZE/CONTROL CANNIBALIZATION/SELECTIVE INTERCHANGE ACTIONS	4.96	0.86	0.04	94.07	
D 20	CONDUCT BRIDGE RECONNAISSANCE	9.30	0.44	0.04	94.11	

D-TSK	TASK TITLE	%	%	% ****	%	N
J141	PREPARE DEPLOYMENT REQUEST	4.34	0.96	0.04	94.15	
O 57	CONDUCT MOUNTAIN WARFARE OPERATIONS	8.52	0.48	0.04	94.19	545
J 68	SUPERVISE CONTROLLED ISSUE OF REPAIR PARTS	5.27	0.76	0.04	94.23	
J106	CONTROL PLANT ACCOUNTS	4.03	1.06	0.04	94.27	
I 72	INVENTORY/TURN-IN PERSONAL EFFECTS OF DECEASED PERSONNEL	6.51	0.61	0.04	94.31	
P 18	ASSIGN DOWNGRADING INSTRUCTIONS TO CLASSIFIED DOCUMENTS	4.03	1.05	0.04	94.35	
F 9	SUPERVISE OFF LINE ENCRYPTION OF MESSAGES	6.51	0.62	0.04	94.39	550
H 8	DEVELOP TASKING STATEMENTS FOR CURRENT OR ON-GOING OPERATIONS	5.12	0.85	0.04	94.43	
P 27	INITIATE SECURITY INVESTIGATION REQUESTS	4.18	1.00	0.04	94.47	
D 27	CONDUCT FIELD SANITATION OPERATIONS	10.23	0.40	0.04	94.51	
J124	JUSTIFY NEW EQUIPMENT AUTHORIZATION LISTS	4.34	0.97	0.04	94.55	
D 5	DETERMINE REQUIREMENTS FOR OBSTACLES	10.54	0.41	0.04	94.59	555
J 42	PROCESS EQUIPMENT TO FLOAT, EVACUATION AND WASHOUT IN LIEU OF REPAIR	4.34	0.92	0.04	94.63	
K 10	ORGANIZE INTERIOR GUARD	6.98	0.57	0.04	94.67	
I 10	REVIEW POSITION OR POINT PAPERS	5.89	0.74	0.04	94.71	
I 48	CONDUCT/PREPARE STAFF STUDIES	3.87	1.03	0.04	94.75	
C 24	INSTRUCT TRAIN PERSONNEL IN THE WEARING OF PROTECTIVE CLOTHING	7.44	0.55	0.04	94.79	560
J155	REQUEST REQUISITION PRIORITIES	4.50	0.91	0.04	94.83	
J127	MONITOR ISSUE AND TURN-IN OF AMMUNITION	8.37	0.49	0.04	94.87	
R 3	DETERMINE CLOSE/DIRECT AIR SUPPORT REQUIRED FOR OPERATIONS	5.74	0.76	0.04	94.91	
J 79	COMPLETE REQUIRED EQUIPMENT RECORDS	5.58	0.72	0.04	94.95	
I 19	IMPLEMENT COMMAND SPECIAL INTEREST ITEMS SUCH AS BENEFICIAL SUGGESTION OR ENERGY PROGRAMS	4.96	0.82	0.04	94.99	565
L 3	IMPLEMENT CIVILIAN COMMUNITY RELATIONS PROGRAMS	2.32	1.67	0.04	95.03	
O 14	PARTICIPATE IN A PENETRATION	7.44	0.50	0.04	95.06	
O 21	CONDUCT A CONVERGING AXIS INFANTRY/ARMOR ATTACK	7.75	0.48	0.04	95.10	
O 24	CONDUCT ATTACK OF A FORTIFIED AREA	10.70	0.36	0.04	95.14	
O 25	CONDUCT MILITARY OPERATIONS IN A BUILT UP AREA MOBA	10.38	0.38	0.04	95.17	570
O 27	CONDUCT DEBARKATION DRILLS	9.30	0.41	0.04	95.21	
O 31	SECURE A LANDING ZONE	9.76	0.39	0.04	95.24	
H 6	LAYOUT WORK CENTER	5.89	0.62	0.04	95.28	
O 52	INSTRUCT/TRAIN PERSONNEL IN MOUNTAIN OPERATIONS	8.84	0.43	0.04	95.32	
O 67	DRAFT SUBMIT TACTICAL REPORTS SUCH AS KOCOA AND METT	8.68	0.44	0.04	95.35	575
C 25	INSTRUCT/TRAIN PERSONNEL IN STANDARD NATO MARKERS/SIGNS FOR NBC CONTAMINATED AREAS	8.06	0.46	0.04	95.39	
O 74	CALL FOR HELICOPTER SUPPORT	8.22	0.44	0.04	95.42	
P 3	APPROVE/DISAPPROVE SECURITY CLEARANCES	3.72	1.01	0.04	95.46	
P 32	SIGN SECURITY TERMINATION STATEMENTS	3.25	1.11	0.04	95.50	
G 39	HOLD SUMMARY COURTS MARTIAL	7.90	0.50	0.04	95.53	580
K 13	ORGANIZE MILITARY DRILL FORMATIONS, SUCH AS PARADES	5.89	0.63	0.04	95.57	
J101	COMPILE/COORDINATE PROCUREMENT DOCUMENTATION	4.34	0.92	0.04	95.60	
O 35	ORGAINZE UNIT BATTLE AREA	6.36	0.51	0.03	95.64	
J100	AUTHORIZE PERSONNEL TO DRAW MUNITIONS ITEMS	5.12	0.66	0.03	95.67	

D-TSK	TASK TITLE	%	%	% ****	%	N
B 4	OPERATE THE M 60 M 60E2 MACHINEGUN	9.61	0.36	0.03	95.70	585
O 68	FORMULATE RIFLE PLATOON PLAN OF ATTACK FOR OPERATIONS IN A BUILT UP AREA	6.98	0.46	0.03	95.73	
D 29	PREPARE FIELD FORTIFICATIONS	7.60	0.45	0.03	95.76	
J 11	DESIGN MAINTENANCE SHOP LAYOUT FOR WORKFLOW/PAPERFLOW	5.89	0.59	0.03	95.80	
P 11	PROCESS COMBAT INFORMATION FOR INTELLIGENCE DATA	4.80	0.67	0.03	95.83	
J 61	COORDINATE SUPPLY SUPPORT OF REPAIR ACTIVITY WITH SUPPLY MANAGERS	5.12	0.68	0.03	95.86	590
D 1	EMPLACE/RECOVER EARLY WARNING DEVICES SUCH AS TRIP FLARES AND BOOBY TRAPS	9.30	0.36	0.03	95.89	
M 26	INSTRUCT/TRAIN PERSONNEL IN PHYSIOLOGICAL EFFECTS OF EXTREME CLIMATES	9.76	0.36	0.03	95.92	
P 20	INSTRUCT/TRAIN PERSONNEL IN POW HANDLING TECHNIQUES	8.52	0.38	0.03	95.96	
C 15	ISSUE CHEMICAL DEFENSIVE ITEMS SUCH AS LEATHER DRESSING OR ATROPHINE INJECTORS	4.03	0.85	0.03	95.99	
L 25	WRITE ENDORSE CIVILIAN PERFORMANCE RATINGS	3.87	0.89	0.03	96.02	595
M 13	INSTRUCT PERSONNEL IN FIELD SANITATION TECHNIQUES	9.76	0.34	0.03	96.05	
R 9	OPERATE GAIL LIGHTING SYSTEM	4.65	0.77	0.03	96.08	
R 13	OPERATE AIRCRAFT ON ECM RANGE	3.41	1.05	0.03	96.12	
E 8	REQUEST AERIAL RECONNAISSANCE SUPPORT	6.98	0.46	0.03	96.15	
R 15	CONDUCT EMCOM OPERATIONS	3.56	0.99	0.03	96.18	600
C 10	DECONTAMINATE SELF/EQUIPMENT/SUPPLIES	7.60	0.42	0.03	96.21	
J 43	PREPARE FORMS NECESSARY FOR EVACUATION, FLOAT AND WASHOUT IN LIEU OF REPAIR	4.03	0.82	0.03	96.24	
B 25	SET UP M16A1 RIFLE AIMING AND FIRING STAKES	8.84	0.38	0.03	96.28	
J 24	PREPARE INPUT TO MAINTENANCE AND READINESS EVALUATION SYSTEM (MARES) REPORT	4.03	0.79	0.03	96.30	
C 28	DETERMINE PERSONNEL NEEDS HYGIENE IN CHEMICAL ENVIRONMENT	5.74	0.52	0.03	96.33	605
O 71	FORMULATE HELICOPTERBORNE ASSAULT	5.74	0.50	0.03	96.36	
O 72	EXPLOIT TACTICAL SUCCESS	7.28	0.42	0.03	96.39	
I 56	IMPLEMENT MINIMIZE PROCEDURES	3.87	0.72	0.03	96.42	
O 33	ORGANIZE A COMBAT OUTPOST	7.28	0.43	0.03	96.44	
M 4	EVACUATE CASUALTIES	6.66	0.42	0.03	96.47	610
I 16	LEAD STAFF MEETINGS	4.03	0.74	0.03	96.50	
J 75	MONITOR THE PREPARATION OF SOP FOR MAINTENANCE MANAGEMENT	3.41	0.89	0.03	96.53	
J 76	ESTABLISH SOP FOR MAINTENANCE MANAGEMENT	3.41	0.93	0.03	96.56	
E 9	REQUEST ASSAULT SUPPORT	5.89	0.50	0.03	96.58	
J 26	PREPARE INPUT TO AUTOMATED INFORMATION SYSTEM AIS REPORT	3.72	0.78	0.03	96.61	615
A 21	INSTRUCT/TRAIN PERSONNEL IN WATER SURVIVAL TECHNIQUES	6.82	0.41	0.03	96.64	
D 2	PREPARE SKETCH MAPS FOR EARLY WARNING DEVICES AND MINEFIELD LAYOUTS	7.90	0.35	0.03	96.67	
O 26	CONDUCT RIVER CROSSING OPERATIONS	7.28	0.40	0.03	96.70	
J130	PREPARE CONTRACTING DOCUMENTS	2.32	1.35	0.03	96.72	
J 53	COORDINATE MAINTENANCE RELATED INPUT TO CONTINGENCY PLANNING	4.80	0.51	0.02	96.75	620
D 24	CONDUCT RAFTING/RIVER CROSSING OPERATIONS	6.20	0.39	0.02	96.77	
J154	DETERMINE BULK FUEL REQUIREMENTS	4.80	0.56	0.02	96.80	

D-TSK	TASK TITLE	%	%	% ****	%	N
O 28	PREPARE A TACTICAL LANDING ZONE	8.37	0.31	0.02	96.82	
O 69	DEVELOP A BARRIER PLAN	7.13	0.39	0.02	96.84	
I 45	ARRANGE FOR DISPOSITION OF DECEASED PERSONNEL	4.50	0.54	0.02	96.87	625
D 14	PREPARE/DETONATE DEMOLITION CHARGE OF LAND	6.20	0.41	0.02	96.89	
J 59	MONITOR SUBMISSION OF QUALITY/RELIABILITY REPORT (QRR)	3.47	0.62	0.02	96.92	
C 17	OPERATE CHEMICAL AGENT DETECTOR KIT	5.74	0.45	0.02	96.94	
M 1	APPLY FIRST AID TO CASUALTIES	6.62	0.36	0.02	96.96	
H 7	EVALUATE JOB DESCRIPTIONS	4.34	0.62	0.02	96.99	630
J 54	PREPARE MAINTENANCE MANAGEMENT INSPECTION PLANS	3.56	0.73	0.02	97.01	
D 6	EMPLACE/REMOVE OBSTACLES SUCH AS WIRE, ROADBLOCKS AND ANTI-MECHANIZED BARRIERS	7.13	0.38	0.02	97.04	
H 4	PREPARE/REVIEW CIVILIAN EMPLOYEE JOB DESCRIPTIONS .	2.94	0.86	0.02	97.06	
J 40	MONITOR OPERATIONAL READINESS FLOAT PROGRAM	4.80	0.58	0.02	97.08	
C 14	CLEAN MAINTAIN CHEMICAL PROTECTIVE CLOTHING	4.80	0.56	0.02	97.11	635
C 29	IMPLEMENT MISSION-ORIENTED PROTECTIVE POSTURE (MOPP)	4.34	0.58	0.02	97.13	
H 34	PREPARE MANPOWER SURVEY REPORT	3.41	0.78	0.02	97.16	
R 6	INSTRUCT/TRAIN PERSONNEL ON AIR DELIVERED ORDNANCE SAFETY PARAMETERS (DISTANCE FROM IMPACT)	3.41	0.82	0.02	97.18	
O 39	ESTABLISH A REVERSE SLOPE DEFENSE	5.89	0.42	0.02	97.20	
J115	EMPLOY THE FIGHT PRINCIPLES OF LOGISTICS	3.41	0.79	0.02	97.23	640
I 3	WRITE TECHNICAL OR PROFESSIONAL ARTICLES	4.03	0.67	0.02	97.25	
J 49	NOMINATE FOR EVACUATION, EQUIPMENT WHICH MEETS ESTABLISHED CRITERIA FOR REPLACEMENT AND EVACUATION PROGRAM (R&E)	5.74	0.48	0.02	97.28	
D 9	POSITION DEMOLITION CHARGES	7.13	0.37	0.02	97.30	
I 63	NOTIFY NEXT OF KIN (NOK) OF DEATH/INJURY OF SERVICE MEMBER	5.74	0.48	0.02	97.32	
H 1	WRITE MILITARY JOB DESCRIPTIONS	3.41	0.71	0.02	97.35	645
J 67	SUPERVISE CONTROLLED ISSUE FROM PART LAYETTES	4.34	0.60	0.02	97.37	
J 57	MONITOR SUBMISSION OF UNSATISFACTORY EQUIPMENT REPORTS (UER)	2.79	0.95	0.02	97.40	
C 11	MARK NBC CONTAMINATION AREAS	4.50	0.51	0.02	97.42	
D 25	CONSTRUCT WIRE OBSTACLES	4.96	0.48	0.02	97.44	
M 5	PURIFY WATER FOR PERSONAL USE	5.89	0.38	0.02	97.46	650
O 53	INSTRUCT/TRAIN PERSONNEL IN JUNGLE OPERATIONS	6.36	0.36	0.02	97.48	
D 8	RECORD HASTY MINEFIELD MARKING	5.12	0.40	0.02	97.50	
O 55	CONDUCT JUNGLE OPERATIONS	5.74	0.41	0.02	97.52	
J 97	ASSIGN QUALITY CONTROL INSPECTORS	3.10	0.65	0.02	97.54	
O 75	CONDUCT NIGHT ARMOR TACTICS	4.96	0.44	0.02	97.56	655
D 12	HARDEN VEHICLES FOR TACTICAL MOVEMENT SUCH AS FIELD EXPEDIENT	5.42	0.40	0.02	97.58	
J 58	PREPARE UNSERVICEABLE EQUIPMENT REPORT (UER)	3.41	0.64	0.02	97.60	
D 26	EMPLACE AP/AT MINES	4.18	0.50	0.02	97.62	
R 7	OPERATE RADAR BEACON FORWARD AIR CONTROL (RABFAC) BEACON	2.48	0.84	0.02	97.64	
M 14	DETERMINE UNIT WATER SUPPLY REQUIREMENTS	6.04	0.38	0.02	97.66	660
R 12	REFUEL HELICOPTERS	2.32	1.01	0.02	97.68	
J 48	PREPARE RECOVERABLE ITEMS REPORT (RIR)	2.94	0.81	0.02	97.70	
J113	DIRECT UNIT PROPERTY MANAGEMENT ACCOUNTING SYSTEM	2.01	1.16	0.02	97.72	
M 6	EXAMINE CASUALTIES FOR EXTENT OF INJURIES	5.58	0.37	0.02	97.74	

D-TSK	TASK TITLE	%	%	% ****	%	N
D 23	INSPECT KNOTS RIGGING FOR SAFETY	6.04	0.39	0.02	97.76	665
O 48	PROCESS PRISONERS OF WAR (POW)	6.66	0.33	0.02	97.78	
D 11	INSTALL/RECOVER ELECTRICALLY ARMED M18A1 (CLAYMORE) MINES/ M60 MOUSETRAPS AND SPRING LOADERS	5.58	0.32	0.02	97.79	
M 22	INSPECT FIELD HEADS FOR UNSANITARY CONDITIONS	4.96	0.36	0.02	97.81	
D 3	REPORT ACTIVITY DETECTED BY EARLY WARNING DEVICES	5.74	0.30	0.02	97.82	
C 30	PREPARE SIMPLIFIED FALLOUT PREDICTIONS	2.63	0.66	0.02	97.84	670
O 15	PARTICIPATE IN A TURNING MOVEMENT	4.65	0.39	0.02	97.86	
D 4	REPAIR WIRE OBSTACLES	4.03	0.46	0.02	97.87	
M 11	REQUEST/CONTROL MEDICAL EVACUATION OF CASUALTIES	5.58	0.34	0.02	97.89	
J146	LOAD/UNLOAD AMMO	4.18	0.47	0.02	97.90	
D 16	SUPERVISE MARKING OF CLEARED LANES IN MINEFIELD	4.18	0.38	0.02	97.92	675
J 50	PREPARE REPLACEMENT AND EVACUATION REPORT (R&E)	2.79	0.59	0.02	97.94	
J108	COORDINATE COST REDUCTION/SAVINGS PROGRAMS	2.01	0.91	0.02	97.95	
O 13	PARTICIPATE IN A DOUBLE ENVELOPMENT	5.42	0.36	0.02	97.97	
D 7	CLEAN/MAINTAIN SENSOR EQUIPMENT	3.10	0.58	0.02	97.98	
D 10	INSTALL HASTY PROTECTIVE MINEFIELDS	4.18	0.43	0.02	98.00	680
O 32	CONDUCT AN INFILTRATION OPERATION	5.58	0.34	0.02	98.02	
J 52	MONITOR MAINTENANCE RECORDS AND REPORTING PROCEDURES FOR GARRISON MOBILE EQUIPMENT	2.94	0.56	0.02	98.03	
M 17	EXAMINE FOOD FOR CONTAMINATION/SPOILAGE	3.72	0.49	0.02	98.05	
C 23	OPERATE PERSONNEL DECONTAMINATION STATION	2.48	0.70	0.02	98.06	
J151	SUPERVISE PERSONNEL LOADING UNLOADING PETROLEUM PRODUCTS	2.94	0.44	0.01	98.08	685
P 25	PREPARE CLASSIFICATION GUIDES	1.39	1.05	0.01	98.09	
J152	ISSUE PETROLEUM PRODUCTS	2.32	0.56	0.01	98.10	
M 21	SELECT FIELD HEAD LOCATIONS	4.65	0.31	0.01	98.11	
J 10	SELECT LAYOUT OF TACTICAL MAINTENANCE AREA FACILITIES AND SHOPS	2.94	0.41	0.01	98.12	
C 21	CONDUCT CHEMICAL RECONNAISSANCE OF UNIT AREAS	2.79	0.47	0.01	98.14	690
O 40	ORGANIZE THE DEFENSE OF A RIVER LINE	3.87	0.32	0.01	98.15	
J145	PREPARE FACILITIES FOR AMMO STORAGE	2.17	0.59	0.01	98.16	
C 19	MONITOR FOOD, WATER OR EQUIPMENT TO DETECT RADIOLOGICAL CONTAMINATION	2.17	0.67	0.01	98.17	
C 22	PROTECT FOOD, WATER AND EQUIPMENT FROM CONTAMINATION BY NBC AGENTS	2.48	0.55	0.01	98.18	
J 9	SELECT TACTICAL SITE TO SUPPORT MAINTENANCE ACTIVITY	3.10	0.42	0.01	98.20	695
O 44	CONDUCT CIVIL DISTURBANCE OPERATIONS	4.34	0.36	0.01	98.21	
O 45	CONDUCT A RELIEF OPERATION	3.72	0.36	0.01	98.22	

Appendix Q: Changes in the Program of Instruction of The Basic Officer Course as a Result of the Marine Corps Junior Officer Occupational Analysis and Instructional System Development Requirements
(Adapted from 38:II-13 - II-15)

Expanded Amphibious Warfare Instruction

Major changes include an analysis of the role of amphibious warfare in today's world with emphasis on those areas critical to the U.S. political and economic interest where amphibious operations may be employed. The historical development of amphibious operations from World War I to the present is included with emphasis on the development and evolution of amphibious doctrine and principles. The course contains a study of how the U.S. Navy and U.S. Marine Corps are organized to conduct amphibious operations to include the role of air and naval gunfire. The course has expanded instruction on the concepts of command and control during amphibious operations as well as the study of ship to shore movement for both surface and heliborne assaults. The study of embarkation planning is included to prepare the officer student to perform as a company grade officer in amphibious operations. The amphibious instruction package was removed from the cognizance of the Tactics Group and put within the Command and Leadership Group to better facilitate instruction. The total changes added 38.25 hours to the previous instruction.

Expanded Nuclear, Biological, Chemical Warfare Defense

The NBC instruction has been expanded to include field training in simulated NBC environments and in-depth familiarization with related

equipment. This broadened training is designed to instill in the students the constant need to train in simulated NBC environments and further develop like training in the FMF. This modification constituted an increase from 4.5 hours to 28.0 hours of instruction.

Leadership

All leadership instruction has been consolidated. The streamlining of instruction provides continual and incremental leadership training and integrates the old Leadership Instruction Department (LID) with TBS leadership instruction. The intent is to create a well-rounded course and to minimize the "overload effect" the previous concentrated two week LID leadership instruction created for the students. Current instruction incorporates all academic leadership instruction presented to the student. Additionally, the instruction has been revised to improve the tailoring of the subject matter to the needs of a lieutenant and to increase the emphasis on officer standards of conduct. Instruction of the leadership aspects of drug usage has been significiantly expanded. In this modification, the instruction was increased from 156.5 hours to 222.0 hours.

Aviation Instruction

Previous aviation instruction tended to impart data rather than knowledge. The revised instruction aids the students in understanding the air/ground missions. The expanded instruction in the functions of Marine Aviation serve as a base to apply and recognize aviation support elements. The revised POI contains the identification of all aviation related and supported instruction.

Company Instruction Time

Company Instruction Time (CIT) was modified primarily due to its lack of definition and accountability. In the current Basic Officer Course, CIT is structured to serve the company staff and students and to maximize its utilization. Under this revision, the periods of CIT are clearly identified and defined. For the first time in some years, the company staff is provided the minimum acceptable scheduled time to their critical role in developing the officership qualities in officer students.

Parallel Scheduling

Scheduling parallel periods of instruction involving application are inherently inefficient when large numbers of students are involved. Not only is the time wasted while waiting one's turn at application, but, with large groups, the instructor-student ratio is such that if the students needs individual attention it is rarely provided. Parallel scheduling is employed to break the Basic Officer Course company down into a more manageable size for application periods. The company may be broken in half or in quarters with each group on a separate schedule. This keeps the instructor-student ratio at a level where full value can be realized from application periods and individual attention can be provided while keeping waiting time to a minimum. The obvious penalty is increased instructor contact hours.

Concurrent Instruction

Even with the Basic Officer Course company broken down into the smallest possible groups for application periods, there is still the

potential for wasted time. In order to make efficient use of this dead time, additional periods of instruction are presented to students who would be otherwise unoccupied. The use of concurrent instruction makes maximum efficient use of available time.

Evaluation System

The evaluation system has been restructured. Non academic evaluations have been removed from the academic average and expanded into a reinstituted military skills category. The leadership evaluation system has been refined and standardized.

Appendix R: Company Grade Officer Survey Package

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433

26 March 1984

From: Major Harold Mashburn, Jr. USMC
To: Survey Participant

Subj: Marine Corps Engineer Officer Education and Training Survey

1. As an active duty Marine Corps Engineer Officer, you have been selected to participate in an important research project. Your responses to the items contained in the attached survey questionnaire will be used in evaluating the appropriateness and effectiveness of our education and training programs. The information you provide will help in formulating plans to improve existing programs.

2. This research is being conducted with the approval and support of the Commandant of the Marine Corps (Code TAP-31) and the Commanding Officer, Marine Corps Engineer School.

3. Anonymity is assured as no names are required, and individual information will not be released. You have the option of including your name if you feel that there is need for further discussion.

4. There may be some portion of our education and training programs which you believe the survey questionnaire does not adequately address. In addition, you may wish to expand upon or explain some of your responses or to make other comments. Please feel free to comment on any question or to add additional information. If you wish to discuss a particular aspect further, please contact me or make a note above your name for me to contact you.

5. Please return the completed survey questionnaire in the envelope provided within one week of receipt.

6. Your participation is sincerely appreciated.

H. MASHBURN, JR.

MARINE CORPS

COMPANY GRADE ENGINEER OFFICER

EDUCATION AND TRAINING SURVEY

PRIVACY ACT STATEMENT

The following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations; and/or

(2) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department Defense Personnel

b. Principal Purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Marine Corps and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

MCO 1500.40, Marine Corps Training Philosophy, Definitions, Priorities and Training Requirements, specifies the training priorities of the Marine Corps. Entry-level training consists of officer acquisition training and initial skill qualification training required to qualify for an MOS. The following training priorities for post-entry level training are listed in the Order to assist commanders in effectively and efficiently managing and conducting their training programs:

a. Mission-Oriented Training
b. Skill Progression Training
c. Functional Training
d. Professional Development Training
e. Essential Subject Training
f. Related Training

The overall objective of this research is to gather sufficient data upon which to base suggested ways to enhance entry- and post entry-level training of the Combat Engineer Officer. Directed toward the accomplishment of this goal, the specific research objectives of this study are to:

a. Determine what tasks company grade Combat Engineer Officers actually perform.

b. Determine if the Military Occupational Specialty (MOS) Manual description of MOS 1302, Engineer Officer, accurately describes tasks actually performed.

c. Collect the perceptions of company grade Combat Engineer Officers of the adequacy of the education and training they have received.

d. Collect the perceptions of field grade Combat Engineer Officers of the adequacy of the current education and training programs.

e. Determine what effect assignments, civilian education, the MOS selection process, and commissioning source have on individual perceptions.

MARINE CORPS COMPANY GRADE ENGINEER OFFICER
EDUCATION AND TRAINING SURVEY

PART I

Please circle the letter to indicate the appropriate answer or fill in the blank with the requested information.

Name:______________________________(Optional) Telephone:__________

1. Grade:

A. 0-1
B. 0-2
C. 0-3
D. 0-4 (Selectee)

2. Years of commissioned service:

A. Less than 2
B. 2-4
C. 5-7
D. 8-10
E. More than 10

3. Through which of the following programs did you receive your commission?

A. OCS
B. PLC
C. NROTC (MO)
D. USNA/USMA/USAF
E. MCEP
F. Other-__________________

4. Primary/Secondary/Tertiary MOS's:________/________/________

5. Which of the following statements best describes your primary MOS?

A. I chose it, and I am satisfied.
B. I chose it, and I am dissatisfied.
C. I did not choose it, and I am satisfied.
D. I did not choose it, and I am dissatisfied.

6. Have you previously held a different primary MOS?

A. Yes
B. No

If yes, what was the previous primary MOS? ____________________

7. What is your current assignment?

A. FMF (engineer-type command).
B. FMF (non-engineer-type command; other).
C. Non-FMF (engineer-related BILMOS/duties).
D. Non-FMF (other).

8. What is your current BILMOS? ______________________________

9. What source of training best prepared you for Combat Engineer Officer assignments?

A. Civilian education/ experience
B. Precommissioning training
C. The Basic School
D. Cbt Engr Officers Course
E. On-the-job experience
F. Correspondence course
G. Engr Officers Advanced Course
H. AWS
I. None
J. Other-______________

10. Which of the following statements best describes the source of training marked in question 9?

A. Thorough; prepared me well.
B. Broadly-based; provided some useful knowledge.
C. Too broad, generalized; limited practical value.
D. Unrelated to actual duty requirements.
E. Nonexistent.

11. What source of training best prepared you for your current assignment?

A. Civilian education/ experience
B. Precommissioning training
C. The Basic School
D. Cbt Engr Officers Course
E. On-the-job experience
F. Correspondence course
G. Engr Officers Advanced Course
H. AWS
I. None
J. Other-______________

12. Which of the following statements best describes the source of training marked in question 11?

A. Thorough; prepared me well.
B. Broadly-based; provided some useful knowledge.
C. Too broad, generalized; limited practical value.
D. Unrelated to actual duty requirements.
E. Nonexistent.

13. What is your highest level of education?

A. Associate Degree
B. Baccalaureate Degree
C. Baccalaureate Degree + graduate hours
D. Masters Degree
E. Masters Degree + hours
F. Other-______________

14. What was the major area of study for your initial baccalaureate-level education? ______________________________

15. To what engineer-type commands have you been assigned? (You may circle more than one.)

A. Combat Engineer Battalion
B. Engineer Support Battalion
C. Wing Engineer Squadron

16. Have you ever been assigned to a facilities/facilities maintenance billet?

A. Yes
B. No

If yes, please answer the following two questions:

- What one source of training best prepared you for that assignment?

  A. On-the-job experience
  B. Command-sponsored programs
  C. Training was not available
  D. Other-________________________________

- Which one of the following best describes the training you received for the assignment?

  A. Thorough; prepared me well.
  B. Broadly based; provided some useful knowledge.
  C. Too broad, generalized; limited practical value.
  D. Unrelated to actual duty requirements.
  E. Nonexistent.

PART II

This part of the survey relates to your perception of the relative importance of the course areas taught during entry level training at The Basic School and at the Marine Corps Engineer School (Combat Engineer Officer Course).

Course areas are listed at the left, each with a corresponding set of numbers and letters. The numbers are a five-point increasing scale which answers the question:

> **Based on your personal experience, what is your perception of the relative importance of this course area to your past and current assignments?**

The numbers on the scale correspond to the following perceptions:

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful 1 2 3 4 5
(4) Somewhat important
(5) Critically important

The letters answer the question:

> **Do you feel that you received adequate training/education in this course area?**

The letters correspond to the following answers:

(Y) Yes
(N) No Y N U
(U) Undecided

Please indicate your responses by circling the appropriate number and letter.

Relative Importance Scale

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important

THE BASIC SCHOOL

Course Area	(-)				(+)			
Personnel/General Administration	1	2	3	4	5	Y	N	U
Logistics	1	2	3	4	5	Y	N	U
Leadership	1	2	3	4	5	Y	N	U
Management	1	2	3	4	5	Y	N	U
Aviation	1	2	3	4	5	Y	N	U
Military Law	1	2	3	4	5	Y	N	U
Land Navigation/Map Reading	1	2	3	4	5	Y	N	U
Tactics/Infantry Weapons	1	2	3	4	5	Y	N	U
Marksmanship	1	2	3	4	5	Y	N	U
Combat Intelligence	1	2	3	4	5	Y	N	U
Drill/Command/Ceremonies	1	2	3	4	5	Y	N	U
Nuclear, Biological, Chemical Warfare	1	2	3	4	5	Y	N	U
Field Engineering	1	2	3	4	5	Y	N	U
Communications	1	2	3	4	5	Y	N	U
Organization and Staff Functioning	1	2	3	4	5	Y	N	U
Supporting Arms	1	2	3	4	5	Y	N	U
Physical Training/Riot Control	1	2	3	4	5	Y	N	U
First Aid	1	2	3	4	5	Y	N	U
History/Tradition	1	2	3	4	5	Y	N	U

Based on the requirements of the billets you have held, you may feel that one or more of the course areas listed above should receive more or less emphasis. Additionally, there may be areas that are not listed above. Please list below the areas that you feel require a change in emphasis.

MORE Emphasis

LESS Emphasis

Relative Importance Scale

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important

THE MARINE CORPS ENGINEER SCHOOL (COMBAT ENGINEER OFFICER COURSE)

Task Inventory	(-)				(+)			
Mobility Enhancing Operations								
Bridging gaps	1	2	3	4	5	Y	N	U
Reducing obstacles	1	2	3	4	5	Y	N	U
Maintaining lines of communications	1	2	3	4	5	Y	N	U
Establishing tactical landing zones	1	2	3	4	5	Y	N	U
Countermobility Operations								
Plan obstacles	1	2	3	4	5	Y	N	U
Employ minefields	1	2	3	4	5	Y	N	U
Construct obstacles	1	2	3	4	5	Y	N	U
Survivability Operations								
Constructing field fortifications	1	2	3	4	5	Y	N	U
Applying countersurveillance measures	1	2	3	4	5	Y	N	U
Masking unit movements	1	2	3	4	5	Y	N	U
General Engineering Skills								
Construction of base camps	1	2	3	4	5	Y	N	U
Construction of concrete structures	1	2	3	4	5	Y	N	U
Use of equipment technical publications	1	2	3	4	5	Y	N	U
Requisitioning of repair parts	1	2	3	4	5	Y	N	U
Completion of equipment records	1	2	3	4	5	Y	N	U

Based on the requirements of the billets you have held, you may feel that one or more of the tasks in the task inventory listed above should receive more or less emphasis. Additionally, there may be tasks that are not listed above. Please list below the tasks that you feel require a change in emphasis or should be added.

MORE Emphasis

LESS Emphasis

PART III

The purpose of this section is to evaluate the relative time spent on certain engineer tasks by officers serving in the Combat Engineer Officer billets. Please read each task and decide how much time you currently spend or have spent on that task while serving in a Combat Engineer Officer billet. Then compare that time with the amount of time you currently spend or previously have spent on all engineer-related tasks. This comparison will be the relative time spent on that task.

Record the relative time spent on each task using the numbers corresponding to the scale shown below.

Relative Time Spent

(0) Zero time spent
(1) Minimal
(2) Moderate
(3) Considerable

After marking the relative time spent on each task, please answer the question

> Do you feel that you have been adequately trained to perform this task?

for each task by circling

(Y) for Yes
(N) for No
(U) for Undecided.

Relative Time Spent	COMBAT ENGINEER OFFICER TASKS	Training Adequacy
_____	Advise on employment of scatterable mines	Y N U
_____	Supervise preparation of decoy fighting positions	Y N U
_____	Supervise installation of booby traps	Y N U
_____	Supervise assault breach.	Y N U
_____	Supervise installation of minefields.	Y N U
_____	Prepare/process minefield recording forms	Y N U
_____	Plan the installation of minefields	Y N U
_____	Supervise clearing of booby traps	Y N U
_____	Supervise installation of the M16A1 antipersonnel mine. . .	Y N U
_____	Supervise disarming of the M16A1 antipersonnel mine . . .	Y N U
_____	Supervise installation of the M15 heavy antitank mine . .	Y N U
_____	Supervise disarming of the M15 heavy antitank mine. . . .	Y N U
_____	Supervise installation of hasty protective minefields . .	Y N U
_____	Supervise deliberate breach	Y N U
_____	Supervise minefield clearing operations	Y N U
_____	Supervise reconnaissance of a demolition target	Y N U
_____	Prepare target folders (nonnuclear)	Y N U
_____	Conduct route clearance operation using explosives. . . .	Y N U
_____	Enforce explosive and demolition safety requirements. . .	Y N U
_____	Clear land with demolitions	Y N U
_____	Supervise calculation and placement of military explosives	Y N U
_____	Create obstacles using explosives	Y N U
_____	Supervise employment of combined arms in obstacle breaching operations.	Y N U
_____	Plan/supervise construction of reinforcing obstacles using engineer equipment.	Y N U
_____	Supervise removal of obstacles using engineer equipment .	Y N U
_____	Supervise cratering of roads during obstacle operations .	Y N U
_____	Supervise disabling of bridges during obstacle operations	Y N U
_____	Plan/supervise construction of revetments	Y N U
_____	Plan/supervise construction of assault bunker	Y N U

_____ Plan/supervise construction of antitank ditch . . . . Y N U

_____ Supervise construction of tracked vehicle fighting position . . . . Y N U

_____ Supervise construction of artillery emplacements. . . . . Y N U

_____ Plan/site field fortifications. . . . . Y N U

_____ Coordinate with other combat arms for best use of terrain . . . . Y N U

_____ Evaluate terrain using aerial photographs . . . . Y N U

_____ Conduct reconnaissance for obstacle locations . . . . Y N U

_____ Conduct engineering reconnaissance mission. . . . . Y N U

_____ Conduct hasty route reconnaissance. . . . . Y N U

_____ Conduct reconnaissance of enemy minefield . . . . Y N U

_____ Prepare and disseminate an overlay. . . . . Y N U

_____ Supervise camouflage of organic vehicles/equipment. . . . Y N U

_____ Advise/supervise other units on camouflage. . . . . Y N U

_____ Conduct deliberate route reconnaissance . . . . Y N U

_____ Plan/supervise reconnaissance of rivers . . . . Y N U

_____ Conduct special reconnaissance missions . . . . Y N U

_____ Plan/supervise reconnaissance of crossing sites . . . . . Y N U

_____ Classify tunnels, underpasses, and similar obstructions . Y N U

_____ Plan/conduct engineer support for the assault phase of a river crossing . . . . . Y N U

_____ Design a nonstandard bridge . . . . Y N U

_____ Design M4T6 fixed span. Y N U

_____ Design Medium Girder Bridge (MGB) . . . . Y N U

_____ Classify timber trestle bridges . . . . Y N U

_____ Classify masonry arch bridges . . . . Y N U

_____ Classify concrete t-beam bridges. . . . . Y N U

_____ Classify river-crossing sites . . . . Y N U

_____ Design anchorage system . . . . Y N U

_____ Plan/conduct rafting operations . . . . Y N U

_____ Plan/conduct float bridge operations. . . . . Y N U

_____ Schedule earthmoving equipment operations . . . . Y N U

_____ Plan/supervise construction of hasty helicopter landing zone . . . . Y N U

_____ Plan/supervise clearing, grubbing, and stripping operations. . . . . Y N U

_____ Plan earthmoving operations using a mass diagram. . . . . Y N U

_____ Plan/supervise cut and fill operations. . . . . Y N U

_____ Plan/supervise backfill and compaction operations . . . . Y N U

_____ Improve soils by stabilization. . . . . Y N U

_____ Design culverts . . . . Y N U

_____ Plan/supervise construction of fords . . . . Y N U

_____ Plan/supervise maintenance of earth roads . . . . Y N U

_____ Install expedient surfaces. . . . . Y N U

_____ Conduct ice/snow removal operations . . . . Y N U

_____ Develop a reinforcing steel schedule. . . . . Y N U

_____ Delineate and estimate drainage areas . . . . Y N U

_____ Design open channels. Y N U

_____ Select erosion controls . . . . Y N U

_____ Plan/supervise construction of combat roads and trails. . Y N U

_____ Perform rapid runway repair . . . . Y N U

_____ Plan/supervise construction and maintenance of combat roads and trails. . . . . Y N U

_____ Supervise use, accountability, and maintenance of engineer handtools . . . . Y N U

_____ Design a boom derrick . . . . Y N U

_____ Compute concrete mix design based on given strength requirements. . . . . Y N U

_____ Design concrete formwork. . . . . Y N U

_____ Interpret plans and specifications. . . . . Y N U

_____ Plan construction of theater of operations building . . . Y N U

_____ Supervise construction of theater of operations building. Y N U

_____ Plan/supervise construction of concrete pad . . . . Y N U

_____ Plan/supervise construction of vertical concrete wall . . Y N U

_____ Design electrical distribution system . . . . Y N U

_____ Lay out a troop camp. Y N U

_____ Inspect maintenance of pioneer tool sets. . . . . Y N U

_____ Inventory platoon tools . . . . Y N U

_____ Inspect maintenance of fiber/wire rope and rigging equipment . . . . Y N U

_____ Define key events/activities and establish milestones . . Y N U

_____ Establish time requirements and develop master schedule . Y N U

_____ Review project work progress in relation to plans, schedules, and costs. . . . . Y N U

_____ Modify/update plans, schedules, and budgets . . . . Y N U

_____ Identify and analyze project work problems. . . . . Y N U

_____ Estimate a project duration . . . . Y N U

_____ Analyze construction directives . . . . Y N U

_____ Conduct construction site investigation . . . . Y N U

_____ Estimate requirements for personnel and equipment for a construction project. . . . Y N U

_____ Prepare critical path networks. . . . . Y N U

_____ Organize construction work forces . . . . Y N U

_____ Prepare construction reports. . . . . Y N U

_____ Conduct construction inspections. . . . . Y N U

_____ Prepare quality control plans . . . . Y N U

_____ Monitor project execution and quality control by observation and reports review . . . . Y N U

_____ Coordinate construction project plans . . . . Y N U

_____ Estimate construction materials . . . . Y N U

_____ Select water point site from maps/photos. . . . . Y N U

_____ Coordinate employment of Navy Mobile Construction Battalion (NMCB) assets. . . . . . Y N U

_____ Coordinate engineer supply and resupply activities. . . . Y N U

_____ Construct advanced landing fields (EAF) . . . . Y N U

_____ Prepare landing sites for helicopter/VTOL operations. . . Y N U

_____ Direct installation/employment of fuel systems (AAFS/TAFDS) . . . . Y N U

_____ Employ your forces as infantry. . . . . Y N U

_____ Employ engineer elements in special operations in cold weather, jungle, or desert environments. . Y N U

_____ Advise the supported commander on the proper employment of combat engineers in support of offensive/defensive operations . . . . Y N U

Appendix S: Field Grade Officer Survey Package

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433

26 March 1984

From: Major Harold Mashburn, Jr. USMC
To: Survey Participant

Subj: Marine Corps Engineer Officer Education and Training Survey

1. As an active duty Marine Corps Engineer Officer, you have been selected to participate in an important research project. Your responses to the items contained in the attached survey questionnaire will be used in evaluating the appropriateness and effectiveness of our education and training programs. The information you provide will help in formulating plans to improve existing programs.

2. This research is being conducted with the approval and support of the Commandant of the Marine Corps (Code TAP-31) and the Commanding Officer, Marine Corps Engineer School.

3. Anonymity is assured as no names are required, and individual information will not be released. You have the option of including your name if you feel that there is need for further discussion.

4. There may be some portion of our education and training programs which you believe the survey questionnaire does not adequately address. In addition, you may wish to expand upon or explain some of your responses or to make other comments. Please feel free to comment on any question or to add additional information. If you wish to discuss a particular aspect further, please contact me or make a note above your name for me to contact you.

5. Please return the completed survey questionnaire in the envelope provided within one week of receipt.

6. Your participation is sincerely appreciated.

H. MASHBURN, JR.

MARINE CORPS

FIELD GRADE ENGINEER OFFICER

EDUCATION AND TRAINING SURVEY

PRIVACY ACT STATEMENT

The following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations; and/or

(2) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department Defense Personnel

b. Principal Purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Marine Corps and/or DOD.

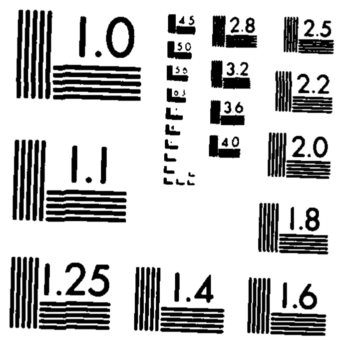
c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

AD-A147 260 AN EVALUATION OF THE EDUCATION AND TRAINING OF MARINE CORPS COMBAT ENGINEER OFFICERS(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH H MASHBURN SEP 84 4/5

UNCLASSIFIED AFIT/GEM/LSM/84S-13 F/G 5/9 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

MCO 1500.40, Marine Corps Training Philosophy, Definitions, Priorities and Training Requirements, specifies the training priorities of the Marine Corps. Entry-level training consists of officer acquisition training and initial skill qualification training required to qualify for an MOS. The following training priorities for post-entry level training are listed in the Order to assist commanders in effectively and efficiently managing and conducting their training programs:

a. Mission-Oriented Training
b. Skill Progression Training
c. Functional Training
d. Professional Development Training
e. Essential Subject Training
f. Related Training

The overall objective of this research is to gather sufficient data upon which to base suggested ways to enhance entry- and post entry-level training of the Combat Engineer Officer. Directed toward the accomplishment of this goal, the specific research objectives of this study are to:

a. Determine what tasks company grade Combat Engineer Officers actually perform.

b. Determine if the Military Occupational Specialty (MOS) Manual description of MOS 1302, Engineer Officer, accurately describes tasks actually performed.

c. Collect the perceptions of company grade Combat Engineer Officers of the adequacy of the education and training they have received.

d. Collect the perceptions of field grade Combat Engineer Officers of the adequacy of the current education and training programs.

e. Determine what effect assignments, civilian education, the MOS selection process, and commissioning source have on individual perceptions.

MARINE CORPS FIELD GRADE ENGINEER OFFICER EDUCATION AND TRAINING SURVEY

PART I

Please circle the letter to indicate the appropriate answer or fill in the blank with the requested information.

Name:______________________________(Optional) Telephone:__________

1. Grade:

   A. 0-4 C. 0-6
   B. 0-5

2. Years of commissioned service:

   A. 10-12 C. 17-20
   B. 13-16 D. More than 20

3. Through which of the following programs did you receive your commission?

   A. OCS D. USNA/USMA/USAF
   B. PLC E. MCEP
   C. NROTC (MO) F. Other-____________________

4. Primary/Secondary/Tertiary MOS's:_______/_______/_______

5. Which of the following statements best describes your primary MOS?

   A. I chose it, and I am satisfied.
   B. I chose it, and I am dissatisfied.
   C. I did not choose it, and I am satisfied.
   D. I did not choose it, and I am dissatisfied.

6. Have you previously held a different primary MOS?

   A. Yes
   B. No

   If yes, what was the previous primary MOS? ____________________

7. What is your current assignment?

   A. FMF (engineer-type command).
   B. FMF (non-engineer-type command; other).
   C. Non-FMF (engineer-related BILMOS/duties).
   D. Non-FMF (other).

8. What is your current BILMOS? ______________________________

9. What source of training best prepared you for Combat Engineer Officer assignments?

A. Civilian education/ experience
B. Precommissioning training
C. The Basic School
D. Cbt Engr Officers Course
E. On-the-job experience
F. Correspondence course
G. Engr Officers Advanced Course
H. AWS
I. None
J. Other-________________

10. Which of the following statements best describes the source of training marked in question 9?

A. Thorough; prepared me well.
B. Broadly-based; provided some useful knowledge.
C. Too broad, generalized; limited practical value.
D. Unrelated to actual duty requirements.
E. Nonexistent.

11. What is your highest level of education?

A. Associate Degree
B. Baccalaureate Degree
C. Baccalaureate Degree + graduate hours
D. Masters Degree
E. Masters Degree + hours
F. Other-________________

12. What was the major area of study for your initial baccalaureate-level education? ______________________________

13. To what engineer-type commands have you been assigned? (You may circle more than one.)

A. Combat Engineer Battalion
B. Engineer Support Battalion
C. Wing Engineer Squadron

14. Have you ever been assigned to a facilities/facilities maintenance billet?

   A. Yes
   B. No

If yes, please answer the following two questions:

- What one source of training best prepared you for that assignment?

   A. On-the-job experience
   B. Command-sponsored programs
   C. Training was not available
   D. Other-____

- Which one of the following best describes the training you received for the assignment?

   A. Thorough; prepared me well.
   B. Broadly based; provided some useful knowledge.
   C. Too broad, generalized; limited practical value.
   D. Unrelated to actual duty requirements.
   E. Nonexistent.

PART II

This part of the survey relates to your perception of the relative importance of the course areas taught during entry level training at The Basic School and at the Marine Corps Engineer School (Combat Engineer Officer Course).

Course areas are listed at the left, each with a corresponding set of numbers and letters. The numbers are a five-point increasing scale which answers the question:

> **Based on your perceptions as a commander/supervisor of company grade Combat Engineer Officers, what is the relative importance of this course area to their duty assignments?**

The numbers on the scale correspond to the following perceptions:

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful   1 2 3 4 5
(4) Somewhat important
(5) Critically important

The letters answer the question:

> **Do you feel that company grade Combat Engineer Officers you have observed received adequate training in this course area?**

The letters correspond to the following answers:

(Y) Yes
(N) No   Y N U
(U) Undecided

Please indicate your responses by circling the appropriate number and letter.

Relative Importance Scale

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important

THE BASIC SCHOOL

Course Area	(-)				(+)			
Personnel/General Administration	1	2	3	4	5	Y	N	U
Logistics	1	2	3	4	5	Y	N	U
Leadership	1	2	3	4	5	Y	N	U
Management	1	2	3	4	5	Y	N	U
Aviation	1	2	3	4	5	Y	N	U
Military Law	1	2	3	4	5	Y	N	U
Land Navigation/Map Reading	1	2	3	4	5	Y	N	U
Tactics/Infantry Weapons	1	2	3	4	5	Y	N	U
Marksmanship	1	2	3	4	5	Y	N	U
Combat Intelligence	1	2	3	4	5	Y	N	U
Drill/Command/Ceremonies	1	2	3	4	5	Y	N	U
Nuclear, Biological, Chemical Warfare	1	2	3	4	5	Y	N	U
Field Engineering	1	2	3	4	5	Y	N	U
Communications	1	2	3	4	5	Y	N	U
Organization and Staff Functioning	1	2	3	4	5	Y	N	U
Supporting Arms	1	2	3	4	5	Y	N	U
Physical Training/Riot Control	1	2	3	4	5	Y	N	U
First Aid	1	2	3	4	5	Y	N	U
History/Tradition	1	2	3	4	5	Y	N	U

Based on the requirements of the billets you have held, you may feel that one or more of the course areas listed above should receive more or less emphasis. Additionally, there may be areas that are not listed above. Please list below the areas that you feel require a change in emphasis.

MORE Emphasis

LESS Emphasis

Relative Importance Scale

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important

THE MARINE CORPS ENGINEER SCHOOL (COMBAT ENGINEER OFFICER COURSE)

Task Inventory	(-)				(+)			
Mobility Enhancing Operations								
Bridging gaps	1	2	3	4	5	Y	N	U
Reducing obstacles	1	2	3	4	5	Y	N	U
Maintaining lines of communications	1	2	3	4	5	Y	N	U
Establishing tactical landing zones	1	2	3	4	5	Y	N	U
Countermobility Operations								
Plan obstacles	1	2	3	4	5	Y	N	U
Employ minefields	1	2	3	4	5	Y	N	U
Construct obstacles	1	2	3	4	5	Y	N	U
Survivability Operations								
Constructing field fortifications	1	2	3	4	5	Y	N	U
Applying countersurveillance measures	1	2	3	4	5	Y	N	U
Masking unit movements	1	2	3	4	5	Y	N	U
General Engineering Skills								
Construction of base camps	1	2	3	4	5	Y	N	U
Construction of concrete structures	1	2	3	4	5	Y	N	U
Use of equipment technical publications	1	2	3	4	5	Y	N	U
Requisitioning of repair parts	1	2	3	4	5	Y	N	U
Completion of equipment records	1	2	3	4	5	Y	N	U

Based on the requirements of the billets you have held, you may feel that one or more of the tasks in the task inventory listed above should receive more or less emphasis. Additionally, there may be tasks that are not listed above. Please list below the tasks that you feel require a change in emphasis or should be added.

MORE Emphasis

LESS Emphasis

PART III

The purpose of this section is to evaluate your perceptions of the relative importance of certain engineer tasks performed by Combat Engineer Officers. Please read each task and decide how you perceive the relative importance, regardless of the combat engineer billet or engineer-type organization.

Record the relative importance of each task by using the numbers corresponding to the scale below.

Relative Importance

(1) Not necessary
(2) Somewhat unimportant
(3) Usually helpful
(4) Somewhat important
(5) Critically important

After marking the relative importance of each task, please answer the question

> Do you feel that current institutional training programs adequately prepare Combat Engineer Officers to perform this task?

for each task by circling

Y for Yes
N for No
U for Undecided.

Relative Importance	COMBAT ENGINEER OFFICER TASKS	Training Adequacy
_____	Advise on employment of scatterable mines	Y N U
_____	Supervise preparation of decoy fighting positions	Y N U
_____	Supervise installation of booby traps	Y N U
_____	Supervise assault breach.	Y N U
_____	Supervise installation of minefields.	Y N U
_____	Prepare/process minefield recording forms	Y N U
_____	Plan the installation of minefields	Y N U
_____	Supervise clearing of booby traps	Y N U
_____	Supervise installation of the M16A1 antipersonnel mine.	Y N U
_____	Supervise disarming of the M16A1 antipersonnel mine	Y N U
_____	Supervise installation of the M15 heavy antitank mine	Y N U
_____	Supervise disarming of the M15 heavy antitank mine.	Y N U
_____	Supervise installation of hasty protective minefields	Y N U
_____	Supervise deliberate breach	Y N U
_____	Supervise minefield clearing operations	Y N U
_____	Supervise reconnaissance of a demolition target	Y N U
_____	Prepare target folders (nonnuclear)	Y N U
_____	Conduct route clearance operation using explosives.	Y N U
_____	Enforce explosive and demolition safety requirements.	Y N U
_____	Clear land with demolitions	Y N U
_____	Supervise calculation and placement of military explosives	Y N U
_____	Create obstacles using explosives	Y N U
_____	Supervise employment of combined arms in obstacle breaching operations.	Y N U
_____	Plan/supervise construction of reinforcing obstacles using engineer equipment.	Y N U
_____	Supervise removal of obstacles using engineer equipment	Y N U
_____	Supervise cratering of roads during obstacle operations	Y N U
_____	Supervise disabling of bridges during obstacle operations	Y N U
_____	Plan/supervise construction of revetments	Y N U
_____	Plan/supervise construction of assault bunker	Y N U

_____ Plan/supervise construction of antitank ditch . . . . Y N U

_____ Supervise construction of tracked vehicle fighting position . . . . Y N U

_____ Supervise construction of artillery emplacements. . . . . Y N U

_____ Plan/site field fortifications. . . . . Y N U

_____ Coordinate with other combat arms for best use of terrain . . . . Y N U

_____ Evaluate terrain using aerial photographs . . . . Y N U

_____ Conduct reconnaissance for obstacle locations . . . . Y N U

_____ Conduct engineering reconnaissance mission. . . . . Y N U

_____ Conduct hasty route reconnaissance. . . . . Y N U

_____ Conduct reconnaissance of enemy minefield . . . . Y N U

_____ Prepare and disseminate an overlay. . . . . Y N U

_____ Supervise camouflage of organic vehicles/equipment. . . . Y N U

_____ Advise/supervise other units on camouflage. . . . . Y N U

_____ Conduct deliberate route reconnaissance . . . . Y N U

_____ Plan/supervise reconnaissance of rivers . . . . Y N U

_____ Conduct special reconnaissance missions . . . . Y N U

_____ Plan/supervise reconnaissance of crossing sites . . . . . Y N U

_____ Classify tunnels, underpasses, and similar obstructions . Y N U

_____ Plan/conduct engineer support for the assault phase of a river crossing . . . . . Y N U

_____ Design a nonstandard bridge . . . . Y N U

_____ Design M4T6 fixed span. Y N U

_____ Design Medium Girder Bridge (MGB) . . . . Y N U

_____ Classify timber trestle bridges . . . . Y N U

_____ Classify masonry arch bridges . . . . Y N U

_____ Classify concrete t-beam bridges. . . . . Y N U

_____ Classify river-crossing sites . . . . Y N U

_____ Design anchorage system . . . . Y N U

_____ Plan/conduct rafting operations . . . . Y N U

_____ Plan/conduct float bridge operations. . . . . Y N U

_____ Schedule earthmoving equipment operations . . . . Y N U

_____ Plan/supervise construction of hasty helicopter landing zone . . . . Y N U

_____ Plan/supervise clearing, grubbing, and stripping operations. . . . . Y N U

_____	Plan earthmoving operations using a mass diagram.	Y	N	U
_____	Plan/supervise cut and fill operations.	Y	N	U
_____	Plan/supervise backfill and compaction operations	Y	N	U
_____	Improve soils by stabilization.	Y	N	U
_____	Design culverts	Y	N	U
_____	Plan/supervise construction of fords	Y	N	U
_____	Plan/supervise maintenance of earth roads	Y	N	U
_____	Install expedient surfaces.	Y	N	U
_____	Conduct ice/snow removal operations	Y	N	U
_____	Develop a reinforcing steel schedule.	Y	N	U
_____	Delineate and estimate drainage areas	Y	N	U
_____	Design open channels.	Y	N	U
_____	Select erosion controls	Y	N	U
_____	Plan/supervise construction of combat roads and trails. .	Y	N	U
_____	Perform rapid runway repair	Y	N	U
_____	Plan/supervise construction and maintenance of combat roads and trails.	Y	N	U
_____	Supervise use, accountability, and maintenance of engineer handtools	Y	N	U
_____	Design a boom derrick	Y	N	U
_____	Compute concrete mix design based on given strength requirements.	Y	N	U
_____	Design concrete formwork.	Y	N	U
_____	Interpret plans and specifications.	Y	N	U
_____	Plan construction of theater of operations building . . .	Y	N	U
_____	Supervise construction of theater of operations building.	Y	N	U
_____	Plan/supervise construction of concrete pad	Y	N	U
_____	Plan/supervise construction of vertical concrete wall . .	Y	N	U
_____	Design electrical distribution system	Y	N	U
_____	Lay out a troop camp.	Y	N	U
_____	Inspect maintenance of pioneer tool sets.	Y	N	U
_____	Inventory platoon tools	Y	N	U
_____	Inspect maintenance of fiber/wire rope and rigging equipment	Y	N	U
_____	Define key events/activities and establish milestones . .	Y	N	U

_____ Establish time requirements and develop master schedule . Y N U

_____ Review project work progress in relation to plans, schedules, and costs. . . . . Y N U

_____ Modify/update plans, schedules, and budgets . . . . Y N U

_____ Identify and analyze project work problems. . . . . Y N U

_____ Estimate a project duration . . . . Y N U

_____ Analyze construction directives . . . . Y N U

_____ Conduct construction site investigation . . . . Y N U

_____ Estimate requirements for personnel and equipment for a construction project. . . . Y N U

_____ Prepare critical path networks. . . . . Y N U

_____ Organize construction work forces . . . . Y N U

_____ Prepare construction reports. . . . . Y N U

_____ Conduct construction inspections. . . . . Y N U

_____ Prepare quality control plans . . . . Y N U

_____ Monitor project execution and quality control by observation and reports review . . . . Y N U

_____ Coordinate construction project plans . . . . Y N U

_____ Estimate construction materials . . . . Y N U

_____ Select water point site from maps/photos. . . . . Y N U

_____ Coordinate employment of Navy Mobile Construction Battalion (NMCB) assets. . . . . . . Y N U

_____ Coordinate engineer supply and resupply activities. . . . . Y N U

_____ Construct advanced landing fields (EAF) . . . . Y N U

_____ Prepare landing sites for helicopter/VTOL operations. . . . Y N U

_____ Direct installation/employment of fuel systems (AAFS/TAFDS) . . . . Y N U

_____ Employ your forces as infantry. . . . . Y N U

_____ Employ engineer elements in special operations in cold weather, jungle, or desert environments. . Y N U

_____ Advise the supported commander on the proper employment of combat engineers in support of offensive/defensive operations . . . . Y N U

Appendix T: Codes Used for Statistical Analyses

Company Grade

Category	Value	Code
Grade	0-1	1
	0-2	2
	0-3	3
	0-4 (Select)	4
Years of commissioned service	< 2	1
	2-4	2
	5-7	3
	8-10	4
	> 10	5
Primary/Secondary/Tertiary MOS	1302	1
	1310	2
	0402	3
	1330	4
	3502	5
	Other	6
Current billet MOS	1302	1
	1310	2
	0402	3
	Other	4
Assignments to engineer-type commands	None	0
	Cbt Engr Bn	1
	Engr Spt Bn	2
	Wing Engr Sqdn	3
	All	4
	Cbt Engr Bn and Engr Spt Bn	5
	Cbt Engr Bn and Wing Engr Sqdn	6
	Engr Spt Bn and Wing Engr Sqdn	7
Relative time spent performing Combat Engineer Tasks	Zero time spent	0
	Minimal	1
	Moderate	2
	Considerable	3

Field Grade

Category	Value	Code
Grade	0-4	5
	0-5	6
	0-6	7
Years of commissioned service	10-12	6
	13-16	7
	17-20	8
	> 20	9
Primary/Secondary/Tertiary MOS	1302	1
	9906	2
	1310	3
	0402	4
	1330	5
	3502	6
	Other	7
Current billet MOS	1302	1
	9906	2
	1310	3
	0402	4
	Other	5
Relative importance of course areas and tasks	Not necessary	1
	Somewhat unimportant	2
	Usually helpful	3
	Somewhat important	4
	Criticially important	5

Appendix U: Crosstabulation Tables

Table U.1

Crosstabulation: Primary MOS by Secondary MOS (Company Grade)

COUNT / ROW PCT / COL PCT / TOT PCT	Secondary 1302 1.	1310 2.	0402 3.	1330 4.	3502 5.	Other 6.	7.	ROW TOTAL
1. 1302	3	20	5	6	5	45	3	87
	3.4	23.0	5.7	6.9	5.7	51.7	3.4	83.7
	21.4	90.9	83.3	100.0	83.3	95.7	100.0	
	2.9	19.2	4.8	5.8	4.8	43.3	2.9	
2. 1310	2	0	0	0	0	1	0	3
	66.7	0	0	0	0	33.3	0	2.9
	14.3	0	0	0	0	2.1	0	
	1.9	0	0	0	0	1.0	0	
3. 0402	5	0	0	0	1	0	0	6
	83.3	0	0	0	16.7	0	0	5.8
	35.7	0	0	0	16.7	0	0	
	4.8	0	0	0	1.0	0	0	
4. 1330	0	1	0	0	0	0	0	1
	0	100.0	0	0	0	0	0	1.0
	0	4.5	0	0	0	0	0	
	0	1.0	0	0	0	0	0	
6. Other	4	1	1	0	0	1	0	7
	57.1	14.3	14.3	0	0	14.3	0	6.7
	28.6	4.5	16.7	0	0	2.1	0	
	3.8	1.0	1.0	0	0	1.0	0	
COLUMN TOTAL	14	22	6	6	6	47	3	104
	13.5	21.2	5.8	5.8	5.8	45.2	2.9	100.0

CHI SQUARE = 60.38551 WITH 24 DEGREES OF FREEDOM. SIGNIFICANCE = .0001

Table U.2

Crosstabulation: Primary MOS by Secondary MOS (Field Grade)

COUNT / ROW PCT / COL PCT / TOT PCT	Secondary 1302 1.	9906 2.	1310 3.	0402 4.	1330 5.	3502 6.	Other 7.	ROW TOTAL
1. 1302	0	7	4	16	15	8	29	79
	0	8.9	5.1	20.3	19.0	10.1	36.7	66.4
	0	100.0	100.0	100.0	100.0	88.9	90.6	
	0	5.9	3.4	13.4	12.6	6.7	24.4	
2. 9906	18	0	0	0	0	1	3	22
	81.8	0	0	0	0	4.5	13.6	18.5
	50.0	0	0	0	0	11.1	9.4	
	15.1	0	0	0	0	.8	2.5	
4. 0402	7	0	0	0	0	0	0	7
	100.0	0	0	0	0	0	0	5.9
	19.4	0	0	0	0	0	0	
	5.9	0	0	0	0	0	0	
5. 1330	1	0	0	0	0	0	0	1
	100.0	0	0	0	0	0	0	.8
	2.8	0	0	0	0	0	0	
	.8	0	0	0	0	0	0	
6. 3502	3	0	0	0	0	0	0	3
	100.0	0	0	0	0	0	0	2.5
	8.3	0	0	0	0	0	0	
	2.5	0	0	0	0	0	0	
7. Other	7	0	0	0	0	0	0	7
	100.0	0	0	0	0	0	0	5.9
	19.4	0	0	0	0	0	0	
	5.9	0	0	0	0	0	0	
COLUMN TOTAL	36	7	4	16	15	9	32	119
	30.3	5.9	3.4	13.4	12.6	7.6	26.9	100.0

CHI SQUARE = [illegible] WITH 30 DEGREES OF FREEDOM. SIGNIFICANCE = .0000

Table U.3

Crosstabulation: Best Source of Training for Combat Engineer Officer Assignments by Training Description (Company Grade)

COUNT / ROW PCT / COL PCT / TOT PCT		Thorough 1.	Broadly Based 2.	Too Broad 3.	Un-related 4.	Non-existent 5.	ROW TOTAL
Civil expl	1.	17	23	0	0	1	41
		41.5	56.1	0	0	2.4	17.7
		27.0	15.8	0	0	16.7	
		7.3	9.9	0	0	.4	
Precom Trng	2.	1	0	0	0	1	2
		50.0	0	0	0	50.0	.9
		1.6	0	0	0	16.7	
		.4	0	0	0	.4	
TBS	3.	5	6	0	0	0	11
		45.5	54.5	0	0	0	4.7
		7.9	4.1	0	0	0	
		2.2	2.6	0	0	0	
CBOC	4.	10	46	9	1	0	66
		15.2	69.7	13.6	1.5	0	28.4
		15.9	31.5	60.0	50.0	0	
		4.3	19.8	3.9	.4	0	
OJT	5.	21	66	6	1	2	96
		21.9	68.8	6.3	1.0	2.1	41.4
		33.3	45.2	40.0	50.0	33.3	
		9.1	28.4	2.6	.4	.9	
Corres	6.	2	1	0	0	0	3
		66.7	33.3	0	0	0	1.3
		3.2	.7	0	0	0	
		.9	.4	0	0	0	
EOAC	7.	7	4	0	0	0	11
		63.6	36.4	0	0	0	4.7
		11.1	2.7	0	0	0	
		3.0	1.7	0	0	0	
None	9.	0	0	0	0	2	2
		0	0	0	0	100.0	.9
		0	0	0	0	33.3	
		0	0	0	0	.9	
COLUMN TOTAL		63	146	15	2	6	232
		27.2	62.9	6.5	.9	2.6	100.0

CHI SQUARE = 126.53943 WITH 28 DEGREES OF FREEDOM. SIGNIFICANCE = .0000

Table U.4

Crosstabulation: Best Source of Training for Combat Engineer Officer Assignments by Training Description (Field Grade)

COUNT / ROW PCT / COL PCT / TOT PCT	Thorough 1.	Broadly Based 2.	Too Broad 3.	Un-related 4.	Non-existent 5.	ROW TOTAL
1.	3	15	0	0	0	18
	16.7	83.3	0	0	0	13.5
Civil exp	7.0	17.9	0	0	0	
	2.3	11.3	0	0	0	
3.	1	2	0	0	0	3
	33.3	66.7	0	0	0	2.3
TBS	2.3	2.4	0	0	0	
	.8	1.5	0	0	0	
4.	5	24	0	0	0	30
	16.7	80.0	0	0	0	22.6
CEOC	11.6	28.6	0	0	0	
	3.8	18.0	0	0	0	
5.	11	18	1	2	0	32
	34.4	56.3	3.1	6.3	0	24.1
OJT	25.6	21.4	50.0	100.0	0	
	8.3	13.5	.8	1.5	0	
6.	2	0	0	0	0	2
	100.0	0	0	0	0	1.5
Corres	4.7	0	0	0	0	
	1.5	0	0	0	0	
7.	21	25	0	0	0	46
	45.7	54.3	0	0	0	34.6
EOAC	48.8	29.8	0	0	0	
	15.8	18.8	0	0	0	
9.	0	0	1	0	1	2
	0	0	50.0	0	50.0	1.5
None	0	0	50.0	0	100.0	
	0	0	.8	0	.8	
COLUMN TOTAL	43	84	2	2	1	133
	32.3	63.2	1.5	1.5	.8	100.0

CHI SQUARE = 124.10993 WITH 30 DEGREES OF FREEDOM. SIGNIFICANCE = .0000

Table U.5

Crosstabulation: Best Source of Training for Current Assignment by Training Description

COUNT / ROW PCT / COL PCT / TOT PCT	Thorough 1.	Broadly Based 2.	Too Broad 3.	Un-related 4.	Non-exis-tent 5.	6.	9.	ROW TOTAL
0	4	4	0	0	0	0	0	8
	50.0	50.0	0	0	0	0	0	3.5
Other	4.5	4.0	0	0	0	0	0	
	1.7	1.7	0	0	0	0	0	
1.	14	12	0	0	0	0	0	26
	53.8	46.2	0	0	0	0	0	11.3
Civil exp	15.9	12.1	0	0	0	0	0	
	6.1	5.2	0	0	0	0	0	
2.	1	0	0	0	0	0	0	1
	100.0	0	0	0	0	0	0	.4
Precom	1.1	0	0	0	0	0	0	
	.4	0	0	0	0	0	0	
3.	4	6	1	0	0	0	0	11
	36.4	54.5	9.1	0	0	0	0	4.8
TBS	4.5	6.1	10.0	0	0	0	0	
	1.7	2.6	.4	0	0	0	0	
4.	12	6	2	1	0	0	0	21
	57.1	28.6	9.5	4.8	0	0	0	9.1
CEOC	13.6	6.1	20.0	20.0	0	0	0	
	5.2	2.6	.9	.4	0	0	0	
5.	48	64	6	2	7	0	0	127
	37.8	50.4	4.7	1.6	5.5	0	0	55.2
OJT	54.5	64.6	60.0	40.0	26.9	0	0	
	20.9	27.8	2.6	.9	3.0	0	0	
6.	0	1	1	0	0	0	0	2
	0	50.0	50.0	0	0	0	0	.9
Corr	0	1.0	10.0	0	0	0	0	
	0	.4	.4	0	0	0	0	
7.	4	5	0	0	0	0	0	9
	44.4	55.6	0	0	0	0	0	3.9
EOAC	4.5	5.1	0	0	0	0	0	
	1.7	2.2	0	0	0	0	0	
8.	0	1	0	0	1	0	0	2
	0	50.0	0	0	50.0	0	0	.9
AWS	0	1.0	0	0	3.8	0	0	
	0	.4	0	0	.4	0	0	
9.	1	0	0	2	18	1	1	23
	4.3	0	0	8.7	78.3	4.3	4.3	10.0
None	1.1	0	0	40.0	69.2	100.0	100.0	
	.4	0	0	.9	7.8	.4	.4	
COLUMN TOTAL	88	99	10	5	26	1	1	230
	38.3	43.0	4.3	2.2	11.3	.4	.4	100.0

CHI SQUARE = 172.83087 WITH 54 DEGREES OF FREEDOM. SIGNIFICANCE = .0000

Appendix V: Comments of Respondents Concerning Education and Training at The Basic School and the Marine Corps Engineer School

The Basic School (Basic Officer Course)

O-1 (Second Lieutenant)

- More emphasis on the function of the Maintenance Management Officer and the MIMMS process.

- More emphasis on the organization of the MAU, MAF, AND MAGTF, how they really function. Landing Force Shore Party was never mentioned. Less emphasis on being a "Grunt," more peer pressure on logistics.

- More emphasis should be placed on combat intelligence and logistics. We are not exposed to the limitations that occur in the FMF. Instruction about the Threat and the actual lack of support of the combat engineers is also lacking. Although leadership is very important, too much time was spent on the subject. Most people develop leadership skills based on past or future experiences, not through classroon lectures.

- More emphasis should be placed on chemical warfare. On a recent deployment an inspection of masks revealed that several Marines had either no filters or training filters inserted. Decontamination units were also inoperable. Military law should be taught on a basic level. Teach items that will confront the company officer in the FMF.

O-2 (First Lieutenant)

- A better presentation of administration would be extremely helpful. A stronger breakdown of how administration operates in the FMF is essential. The relationship of the company First Sergeant should be taught.

- More emphasis should be placed on leadership and management. We need to look at the graduate schools throughout the country and update our methods. Economy of limited resources needs to be emphasized together with ways to set realistic priorities.

- More emphasis should be placed on the use of supporting arms and the practical use of engineers in combined arms operations. It should be stressed that the Marine Corps system is built around the infantry.

- Less emphasis should be place on breaks and wasted time.

- Practical application really enables an individual to learn. I did not really understand my administrative role until I was in it.

- Place more emphasis on the concept that Marine officers are supervisors/teachers/leaders and get away from training officer students as if they are going to be enlisted Marines.

O-3 (Captain)

- Those officers who attended TBS after the establishment of the Infantry Officer Course (IOC) missed a great deal of instruction in company level weapons, particularly the M-60 and M-2 machineguns and the mortars. Preparation for platoon and company level tactics was adequate, but battalion level operations were not well covered. The combat engineer platoon commander must know how the infantry battalion will deploy and how he ties into fire support coordination plans and the maneuver plans of the supported battalion.

- Leadership is critical. Anyone who has the requisite education for qualification as an officer can usually figure out day-to-day events on his own or by reading a manual. Conversely, I know of no program that teaches leadership other than by on-the-job experience. I remember very little interaction with enlisted personnel while attending TBS as a student. As a staff member now assigned to TBS, I realize the potential that may be gained by student officers through greater interaction with the enlisted personnel assigned here.

- More emphasis should be placed on the crisis that the overinflated fitness report system has spawned. Also, the value of discipling and an understanding of the manning levels with which we must cope should be stressed.

- Too much emphasis is placed on hurrying through the field problems. The staff should not be concerned with being on time for the next evolution.

- Less emphasis should be placed on "canned" classroom presentations that take up more time than should be required for the completion of the subject matter. In particular, too much time is spent in areas that I would call "familiarization" training. You are not likely to use the training and will probably not retain it for long. If exposure to a subject is the objective, then offer actual exposure.

- TBS is a leadership school which provides a broad base of knowledge but does not make the new lieutenant particularly proficient in any one area.

- More emphasis is required on the general administration information a platoon commander needs to know to take care of his Marines. Administration in the Marine Corps is unreliable and unpredictable. Any leader who is not up to date on procedures cannot pay, promote, or protect his Marines against financial problems.

O-4 (Major)

- If there is any one item I would like to see changed it is the training received at TBS. The combat engineer faces the same problems that confront the infantry lieutenant, but he does not have a captain there to guide him. It is only fair that he receive the same training. I doubt that we can ever convince anyone that the engineer is as much a combat arm specialty as is the infantryman, but it needs to be brought to someone's attention.

- Less emphasis should be placed on military law and general administration. Both are certainly valuable areas, but the young officer is better served by instruction in a Marine organization after he gets to the FMF. No one instructs personnel administration as well as a First Sergeant.

- Less emphasis should be placed on physical training. This is an individual event. Students should be decommissioned if they drop below second class at TBS. Time is too precious to waste on "group runs."

- Combat engineers need to be educated better in those infantry officer skills that are required of them when they support an infantry battalion immediately after reporting to their command. This knowledge also would help them compete on the promotion ladder with equal credibility.

- More emphasis should be placed on infantry tactics, weapons, and supporting arms. This is extremely important since the engineer lieutenant is usually on his own when supporting an infantry battalion. His secondary mission is to fight his unit as infantry. The combat engineer field is as combat oriented as the infantry, and they should receive the same training.

- The land navigation training at TBS is good. Officers learn the fundamentals of land navigation and map reading. However, officers, in general, do not understand how to supervise mapping operations. We engineers also do not understand the many types of map/chart products which can enhance engineer construction, reconnaisance, barrier planning, etc.

O-5 (Lieutenant Colonel)

- More emphasis should be placed on infantry skills that are essential for combat engineer officers. Leadership and field engineering are also essential subjects. Logistics is acquired, and it needs to be taught on a similar level as other combat support subjects. Management is also acquired. Once the essentials of evaluation and decision making are covered, the rest is acquired through experience.

The Marine Corps School (Combat Engineer Officer Course)

O-1

- At the MCES you only get a small amount of instruction on certain areas of engineering. The school should expand its courses to a journeyman type course to include practical application in all areas. At present, the only good training I have received has been through on-the-job training.

- At MCES, I was told that I would never see AM-2 matting. Within one year, I have participated in four EAF recovery operations. I was left ignorant in the areas of MIMMS and bulk fuel to the point that I could not discuss it. I found that I was not adequately trained to plan the use of utilities equipment. MCES was almost a waste of time.

- More practical application should be used in the classroom. Examples are ordering parts, use of publications, construction, and maintaining routes of supply and lines of communication. All training should be conducted in a realistic environment.

- As a platoon commander, I have been attached to BLT 1/3 for a WestPac float. I am constantly fighting to have engineers employed properly. A minimum amount of instruction was given in this area. More emphasis in the areas of obstacle/barrier plans, breaching operations and construction of obstacles and field fortifications would be helpful.

- I think ordering repair parts and completion of equipment records should have more time. The only way I learned these was through my company commander, who was in charge of a maintenance section.

O-2

- Much more time should be put on MIMMS instruction. The rushed course did not help that much. A practical exercise with some actual FMF equipment would be helpful.

- A presentation of what an engineer platoon actually does, what equipment it has, and what limitations face the commander would help many new officers get a better start on their first assignment. Many officers I worked with lacked any engineer experience, and it took them many tours to develop into functional engineer officers. They lacked the true perspective of what an engineer officer can do for an infantry battalion or a combined arms force.

- As a combat engineer I deal with mines, obstacles, demolitions and field fortifications. I do not feel that MCES adequately prepared me for this. I feel MCES is more for combat service support engineers than combat support engineers. Less emphasis should be placed on construction, material estimation, etc. We spent a week on each of these.

- The CEOC needs to put more emphasis on support engineer subjects such as construction quality control, MIMMS, and earthworking.

- The CEOC in general had insufficient content, lacked appropriate instructors and gave insufficient time to practical experience. Compared with other MOS courses, the combat engineers are less educated in their profession. Infantry, aviation, tankers, artillerymen and communications officers all appear much more knowledgable in their skills than the combat engineers. The course appears to have been hastily developed, and officer training has been given a back-seat to the day-to-day operations of managing the enlisted personnel. It is recommended that more officer instructors and more man-hours be taught.

- More training is required in all of the engineer tasks. While there was a general teaching of each field, engineering is too important and complicated to be taught in eight to ten weeks. Also, the equipment officers' MIMMS course should be a part of the basic course. Not enough emphasis is placed on the planning of tasks.

- Almost everything I have learned has been through on-the-job training. The CEOC barely prepared me for work in the FSSG. It is completely designed for Division engineers. This must change. The FSSG engineer is a much more diversified officer than the Division engineer. Also, much more emphasis must be placed on the employment and maintenance of engineer equipment.

- Less emphasis should be placed on softball and "clamming." The instructors are good but are interested in getting finished early.

- All areas need more emphasis, and not merely through reading a text book. More practical experience is needed.

- More emphasis should be placed on all of the general engineering skills. I received adequate training, but more emphasis is needed to make the learning sufficient. On-the-job training has been responsible for increasing my proficiency. I believe that all of the tasks in the current task inventory are important. However, we do not always get the opportunity to exercise knowledge in those areas, thus how can one decide if he received adequate training or education in that particular course area.

- The "how-to-do-it" of permanent construction, especially concrete, has absolutely no place in today's combat environment. We spent far too much time on the stuff. My platoon sergeant and squad leaders should be far better at that than I. Almost no time was spent learning planning, organizing, or staffing.

- Less emphasis should be placed on permanent structures and hard surface roads. If a Marine Corps vehicle can drive down a road I build that is all that should be necessary. The Marine Corps has no need for permanent roads or buildings.

- All tasks need to be emphasized more. There should be more practical application and a longer school.

- I received no instruction on bulk fuel operations and upon completion of CEOC was assigned as the OIC of a TAFDS unit. Needless to say, I was lost. The heavy equipment portion of the course also needs to be emphasized more.

- I realize that the CEOC is tailored to the engineer officer, MOS 1302, but more times than not the 1302 will get involved in other engineer specialties for which he has no training, particularly in the wing. I have been with a WES for three years, and I have only performed as a basic engineer officer for three months. The remainder of the time I have been a bulk fuel officer and an engineer equipment officer.

- MIMMS training must be improved.

- More emphasis must be placed on teaching the engineer function with relation to the infantry battalion and the identification of the combat service support functions within the wing.

- While I was at the CEOC the shore party package was only a day. Although I am a 1302, I am presently filling a shore party officer billet with only that day of schooling. Most of the things I am doing were learned the hard way.

O-3

- More emphasis should be placed on practical application of classroom learning objectives.

- General engineering and construction skills should receive less emphasis. A combat engineer platoon commander must know mobility and countermobility operations. He must provide the breaching and obstacle reduction capability for an infantry battalion, and he must understand the barrier plan and how to emplace and breach obstacles while covered by fire. Construction skills are important, but a combat engineer officer who can not advise a battalion commander on how to overcome or create obstacles is not of use in the FMF.

- I did not realize how poor the CEOC was until I saw what the second lieutenants were doing at Ft. Belvoir.

- Overall, the CEOC was of little value. Those officers with no construction or engineering backgrounds do not get enough information to supervise construction projects primarily because they do not understand building principles or things like soil mechanics and drainage. Proper planning/supervision can only take place if the individual is acquainted with all aspects of the project.

- I feel that for Marine Combat Engineer Officers to be ready to supply valuable engineering advice to commanders and to accomplish the basic tasks that befall us, the CEOC should be doubled in length. We are forced to scramble, improvise, and guess.

- The CEOC should be reorganized. It was geared towards a private or lance corporal on knowledge of tools. It should be used to teach the young officer what is going to be expected of him as the engineer officer supporting an infantry battalion.

- I am not sure what kind of response you are getting, but I generally feel that the CEOC is insufficient, particularly with today's fast-moving combat requirements. I think that we, as young engineer lieutenants who are required to give advice on a BLT level, are unprepared in many aspects of our mission. My "dream sheet" would read something along the lines of the Army Advanced Course (EOAC) as basic preparation, along the lines of our artillery and tank counterparts.

- More emphasis should be placed on actual practical experience in all areas. In the FMF you often do not have sufficient SNCOs available to teach new Marines. More time must be spent on mine warfare and planning obstacle emplacement.

- When I went through the CEOC, it prepared me for very little in the FMF. The majority of my education came from experience and from the EOAC. Hopefully, the CEOC has changed and will continue to change to meet the requirements of the Marine Corps.

- More emphasis should be placed on professional engineering. Young lieutenants have a hard time running anything but simple backyard construction projects. Since the skilled SNCOs and enlisted are thinning out, it is the officers role to instruct. The young lieutenant does not have the experience to instruct or manage large jobs. For the 1302, there is no instruction in fuel operations except for Army pipeline doctrine.

- Less emphasis should be placed on general construction skills. Combat engineers are more involved in the other task areas. Additionally, hard construction skills take a long time to develop. Good management ability and leadership will make up for the lack of knowledge or experience in this area.

- The majority of my FMF billets required extensive knowledge of carpentry and verticle construction skills. I joined the Marine Corps already having this knowledge from civilian job experience. Engineer Support Battalion troops generally lack this required knowledge and, without my prior experience, I would not have been prepared to train and supervise them in this area. Preparing for a deployment as the Engineer Detachment Commander with an MSSG or a BLT requires a great deal of knowledge in determining from the mission what type equipment and personnel are required. We are not prepared to handle this.

- Suppose one has received no training in the subject and was fortunate enough not to be placed in a position where that knowledge was vital. Not all graduates of CEOC go to a Combat Engineer Battalion yet are expected to possess skills that go beyond basic combat engineer expertise. Thus, if I have received little or no training in a

particular subject and have never had to manifest that skill in the FMF, no training is adequate. Bulk fuel, electrical power supply, vertical and horizontal construction, and expeditionary airfields are prime examples.

- The average Combat Engineer Officer appears to gather just enough information at the CEOC to make him dangerous. Without the civilian construction experience that I have, it would have been very difficult to complete assigned tasks.

O-4

- One of the greatest difficulties or fallacies concerning the schooling for Combat Engineer Officers is the utilization of enlisted instructors. Their perspectives are different. The level of instruction is grossly inadequate, far below that of a college graduate. It is not comprehensive enough to prepare any new officer to become the "duty expert" on the myriad engineer tasks he may be lucky to encounter. Another difficulty lies in the misutilization of engineers. Combat Engineer Officers should serve in 1302 billets.

- More emphasis should be placed on MCATF operation, especially on the integration of engineers in combat operations. Less emphasis should be placed on troop related topics. Young officers should be focusing on the management of projects, not turning wrenches or swinging axes. The troops will provide the required labor if the lieutenant has done his job.

-The lieutenant is the duty expert. He must be prepared for inefficient subordinates and trained to identify what is wrong.

- Take a look at the MCCRES requirements and insure that emphasis is placed on those requirements.

- Conduct an exercise in which you could put an engineer unit into an area and have them construct obstacles. Then have another unit come in and remove/breach the obstacles. Do this in the field, but only have an engineer unit involved and do not put any tactics in the problem. Once units have mastered the basic engineer tasks, then add the tactics. Now we try to combine tactics from the beginning and engineer efforts hold up the play of the problem. We have to train the infantry that the enhancement of mobility and the reduction of obstacles take time and must be planned. Now too much is simulated and prepositioned and the engineers lose out in the end.

- In general, we could use more "hard skill" training, much like that offered at the EOAC at Ft. Belvoir.

- I feel that all of the subjects taught at the CEOC were important and provided good background for the young officer. If anything, lengthen the course to pack more in.

O-5

- I have been away from the MCES for so long that I do not feel qualified to offer an evaluation on the adequacy of overall training. The young officers with whom I come in contact seem generally well trained. I think we need more emphasis on the coordination of fire support and how best to advise the supported commander. He does not know what questions to ask, and we do not school the lieutenant well enough to tell him.

- While the CEOC may teach these subjects, there is no way a young officer will be completely trained to perform well in his first assignment just from the school exposure. It depends on the individual and what OJT he gets in his first assignment. Even though I marked a number of "N"s (not adequately trained), it is not practical to think that the CEOC should adequately train officers in the short time frame available.

- If our company grade officers could advise the supported commander on the proper employment of combat engineers, half of our problems would be solved.

- The categories of more and less emphasis are difficult to prioritize due to critical deficiencies in both established doctrine to teach and requisite engineer equipment to do the job. We cannot teach what we do not have. Mobility, countermobility, and survivability must be taught to all MOSs, not just to the combat engineer. They must receive increased emphasis at basic and intermediate level schools.

- My observation is that we are doing an adequate job of training combat engineers. Wing requirements are critical, however, and training is generally not adequate to meet the needs.

Appendix W: Company Grade Officer Perceptions of the Relative Time Spent Performing and Training Adequacy for Engineer Officer Tasks

Combat Engineer Tasks	Relative Time Spent					Training Adequacy			
	0	1	2	3	Mean	Yes	No	Und	
Advise on employment of scatterable mines	121	71	20	9	0.62	61	138	27	
Supervise preparation of decoy fighting positions	137	64	17	4	0.50	94	109	24	
Supervise installation of booby traps	60	72	65	25	1.25	126	76	24	*
Supervise assault breach	79	56	49	38	1.21	94	113	19	*
Supervise installation of minefields	62	57	58	45	1.39	144	56	27	*
Prepare/process minefield recording forms	66	61	61	32	1.27	151	48	28	*
Plan the installation of minefields	63	66	54	38	1.30	147	52	27	*
Supervise clearing of booby traps	72	75	55	20	1.10	106	95	24	**
Supervise installation of the M16A1 antipersonnel mine	84	77	38	23	1.00	125	66	35	**
Supervise disarming of the M16A1 antipersonnel mine	93	73	34	22	0.93	114	76	36	
Supervise installation of the M15 heavy antitank mine	78	74	46	24	1.07	136	60	31	**
Supervise disarming of the M15 heavy antitank mine	79	76	43	24	1.05	129	67	30	**
Supervise installation of hasty protective minefields	66	58	56	41	1.33	126	75	25	*
Supervise deliberate breach	78	55	56	32	1.19	111	85	31	*
Supervise minefield clearing operations	68	66	50	36	1.25	120	84	23	*
Supervise reconnaissance of a demolition target	81	75	52	14	0.99	108	86	32	
Prepare target folders (nonnuclear)	169	36	8	6	0.32	30	154	42	
Conduct route clearance operation using explosives	107	65	32	18	0.82	123	75	28	
Enforce explosive and demolition safety requirements	29	38	51	103	2.03	188	21	17	**
Clear land with demolitions	78	66	41	36	1.16	170	39	18	*
Supervise calculation and placement of military explosives	33	56	67	65	1.74	183	27	16	**
Create obstacles using explosives	70	63	56	32	1.23	171	35	21	*

* indicates those tasks that performed by at least 30 percent of the respondents at the "moderate" or "considerable" relative time spent levels.

** indicates those tasks that are not performed at the "moderate" or "considerable" levels by at least 30 percent of the respondents but have means of at least 1.0

	Relative Time Spent					Training Adequacy			
	0	1	2	3	Mean	Yes	No	Und	
Supervise employment of combined arms in obstacle breaching operations	115	61	26	20	0.78	63	133	30	
Plan/supervise construction of reinforcing obstacles using engineer equipment	61	68	53	38	1.31	108	91	28	*
Supervise removal of obstacles using engineer equipment	63	68	54	34	1.27	118	88	21	*
Supervise cratering of roads during obstacle operations	81	67	49	23	1.06	161	46	20	**
Supervise disabling of bridges during obstacle operations	124	54	31	13	0.70	131	66	30	
Plan/supervise construction of revetments	99	65	39	18	0.89	117	87	23	
Plan/supervise construction of assault bunker	101	61	42	18	0.90	106	94	27	
Plan/supervise construction of antitank ditch	85	50	48	38	1.18	148	58	17	*
Supervise construction of tacked vehicle fighting position	126	46	36	14	0.72	100	97	26	
Supervise construction of artillery emplacements	140	54	18	8	0.52	81	119	24	
Plan/site field fortifications	62	82	53	23	1.17	131	71	24	**
Coordinate with other combat arms for best use of terrain	89	61	40	31	1.06	88	106	33	**
Evaluate terrain using aerial photographs	104	73	32	14	0.81	80	115	32	
Conduct reconnaissance for obstacle locations	54	72	60	36	1.35	151	54	21	**
Conduct engineering reconnaissance mission	33	75	58	54	1.61	159	46	22	**
Conduct hasty route reconnaissance	50	81	50	40	1.36	155	49	23	*
Conduct reconnaissance of enemy minefield	130	53	28	12	0.65	81	115	30	
Prepare and disseminate an overlay	53	70	63	36	1.37	137	68	22	*
Supervise camouflage of organic vehicles/equipment	32	55	71	62	1,74	165	47	17	**

	Relative Time Spent					Training Adequacy			
	0	1	2	3	Mean	Yes	No	Und	
Advise/supervise other units on camouflage	70	66	59	27	1.19	153	53	22	*
Conduct deliberate route reconnaissance	60	75	56	31	1,26	157	46	23	*
Plan/supervise reconnaissance of rivers	123	69	17	14	0.65	90	101	35	
Conduct special reconnaissance missions	129	62	16	16	0.64	66	112	49	
Plan/supervise reconnaissance of crossing sites	109	74	22	18	0.77	94	97	36	
Classify tunnels, underpasses, and similar obstructions	125	67	20	10	0.62	112	77	38	
Plan/conduct engineer support for the assault plase of a river crossing	155	35	18	14	0.51	65	126	35	
Design a nonstandard bridge	117	73	24	8	0.65	141	57	28	
Design M4T6 fixed span	133	50	24	14	0.63	129	63	36	
Design Medium Girder Bridge (MGB)	165	32	13	11	0.41	84	103	39	
Classify timber trestle bridges	118	65	27	13	0.71	135	57	35	
Classify masonry arch bridges	153	46	17	7	0.45	107	84	35	
Classify concrete t-beam bridges	136	53	23	11	0.59	115	77	35	
Classify river-crossing sites	144	53	16	10	0.52	89	104	35	
Design anchorage system	144	51	22	5	0.50	91	103	34	
Plan/conduct rafting operations	161	35	12	14	0.46	80	107	40	
Plan/conduct float bridge operations	151	35	17	19	0.59	98	93	37	
Schedule earthmoving equipment operations	41	50	55	74	1.74	121	87	18	**
Plan/supervise construction of hasty helicopter landing zone	92	61	41	28	1.02	122	79	26	**
Plan/supervise clearing, grubbing, and stripping operations	83	59	44	36	1.15	109	88	30	*

	Relative Time Spent					Training Adequacy			
	0	1	2	3	Mean	Yes	No	Und	
Plan earthmoving operations using a mass diagram	135	38	19	29	0.74	62	128	38	
Plan/supervise cut and fill operations	84	49	47	41	1.20	101	99	28	*
Plan/supervise backfill and compaction operations	85	44	45	46	1.24	100	99	29	*
Improve soils by stabilization	112	47	39	23	0.88	75	121	32	
Design culverts	84	61	51	26	1.09	135	70	22	*
Plan/supervise construction of fords	168	30	13	11	0.40	59	120	47	
Plan/supervise maintenance of earth roads	70	48	58	45	1.35	127	80	20	*
Install expedient surfaces	100	56	35	27	0.95	94	99	33	
Conduct ice/snow removal operations	161	34	14	13	0.46	61	124	41	
Develop a reinforcing steel schedule	178	28	8	8	0.31	30	153	44	
Delineate and estimate drainage areas	108	60	38	17	0.84	82	105	38	
Design open channels	172	27	15	9	0.38	54	128	44	
Select erosion controls	137	45	30	11	0.62	64	118	44	
Plan/supervise construction of combat roads and trails	93	62	41	26	1.00	104	85	37	**
Perform rapid runway repair	141	30	23	25	0.69	66	118	42	
Plan/supervise construction and maintenance of combat roads and trails	93	57	43	28	1.03	108	86	32	**
Supervise use, accountability, and maintenance of engineer handtools	20	25	47	128	2.29	156	57	15	**
Design a boom derrick	162	37	18	6	0.41	75	117	36	
Compute concrete mix design based on given strength requirements	98	58	44	23	0.96	129	69	29	
Design concrete formwork	78	59	54	31	1.17	140	67	21	*

	Relative Time Spent					Training Adequacy			
	0	1	2	3	Mean	Yes	No	Und	
Interpret plans and specifications	53	51	66	52	1.53	154	53	21	**
Plan construction of theater of operations building	147	44	13	17	0.55	64	113	49	
Supervise construction of theater of operations building	155	36	16	14	0.50	71	105	50	
Plan/supervise construction of concrete pad	80	53	49	38	1.21	151	51	26	*
Plan/supervise construction of vertical concrete wall	119	40	37	25	0.86	118	72	38	
Design electrical distribution system	135	44	26	18	0.67	52	114	31	
Lay out a troop camp	69	54	49	50	1.36	104	96	28	*
Inspect maintenance of pioneer tool sets	13	33	62	114	2.25	160	56	12	**
Inventory platoon tools	10	35	58	119	2.29	161	56	11	**
Inspect maintenance of fiber/wire rope and rigging equipment	47	58	57	61	1.59	126	76	25	**
Define key events/activities and establish milestones	26	35	63	95	2.04	142	61	24	**
Establish time requirements and develop master schedule	37	44	61	79	1.82	135	71	22	**
Review project work progress in relation to plans, schedules, and costs	51	44	61	65	1.63	116	84	26	**
Modify/update plans, schedules, and budgets	53	54	53	62	1.56	100	100	28	**
Identify and analyze profect work problems	32	61	62	64	1.72	122	88	21	**
Estimate a project duration	31	50	69	72	1.82	121	80	27	**
Analyze construction directives	76	57	54	36	1.22	92	95	41	*
Conduct construction site investigation	53	58	60	51	1.49	107	93	28	*
Estimate requirements for personnel and equipment for a construction project	34	46	68	71	1.80	156	53	18	**
Prepare critical path networks	79	65	47	31	1.14	148	62	18	*

	Relative Time Spent					Training Adequacy			
	0	1	2	3	Mean	Yes	No	Und	
Organize construction work forces	38	44	64	74	1.79	97	100	31	**
Prepare construction reports	65	68	49	40	1.29	101	97	30	*
Conduct construction inspections	60	51	50	58	1.43	59	130	39	*
Prepare quality control plans	109	62	32	19	0.82	76	120	31	
Monitor project execution and quality control by observation and reports review	89	64	35	34	1.06	76	120	31	**
Coordinate construction project plans	65	67	40	48	1.32	111	92	25	*
Estimate construction materials	29	66	64	63	1.73	159	52	17	**
Select water point site from maps/photos	107	68	28	19	0.82	90	106	32	
Coordinate employment of Navy Mobile Construction Battalion (NMCB) assets	169	25	12	16	0.44	35	163	30	
Coordinate engineer supply and resupply activities	58	54	66	43	1.43	81	118	29	*
Construct advanced landing fields (EAF)	132	29	23	36	0.83	64	129	35	
Prepare landing sites for helicopter/VTOL operations	91	59	40	33	1.07	85	104	39	**
Direct installation/employment of fuel systems (AAFS/TAFDS)	104	50	34	32	0.97	50	151	27	
Employ your forces as infantry	41	58	68	56	1.62	156	56	16	**
Employ engineer elements in special operations in cold weather, jungle, or desert environments	64	44	53	59	1.49	93	112	23	*
Advise the supported commander on the proper employment of combat engineers in support of offensive/defensive operations	38	38	53	89	1.89	114	92	22	**

Appendix X: Field Grade Officer Perceptions of the Relative Importance of and Training Adequacy for Engineer Officer Tasks

	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Advise/supervise other units on camouflage	1	3	39	53	33	3.88	56	50	23
Conduct deliberate route reconnaissance	1	1	24	49	54	4.19	75	33	21
Plan/supervise reconnaissance of rivers	0	3	31	39	55	4.14	43	62	24
Conduct special reconnaissance missions	4	7	39	42	35	3.76	31	56	42
Plan/supervise reconnaissance of crossing sites	0	3	24	33	68	4.30	51	57	21
Classify tunnels, underpasses, and similar obstructions	0	4	37	50	37	3.94	51	53	25
Plan/conduct engineer support for the assault phase of a river crossing	2	4	9	37	76	4.41	28	78	22
Design a nonstandard bridge	5	6	29	51	37	3.85	75	31	23
Design M4T6 fixed span	4	5	28	43	48	3.98	79	28	22
Design Medium Girder Bridge (MGB)	2	2	24	39	59	4.20	57	34	38
Classify timber trestle bridges	0	7	22	52	47	4.09	81	26	22
Classify masonry arch bridges	1	6	30	47	44	3.99	64	39	26
Classify concrete t-beam bridges	1	7	27	48	45	4.01	62	37	30
Classify river-crossing sites	1	3	29	46	49	1.09	46	54	28
Design anchorage system	1	8	32	55	32	3.85	50	49	30
Plan/conduct rafting operations	2	4	32	46	45	3.99	45	58	26
Plan/conduct float bridge operations	2	3	34	41	49	4.02	56	51	22
Schedule earthmoving equipment operations	0	4	40	47	38	3.99	60	45	24
Plan/supervise construction of hasty helicopter landing zone	1	1	26	48	53	4.17	69	38	22
Plan/supervise clearing, grubbing, and stripping operations	1	3	45	43	36	3.86	63	41	25

	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Supervise employment of combined arms in obstacle breaching operations	1	4	16	43	65	4.30	27	84	18
Plan/supervise construction of reinforcing obstacles using engineer equipment	1	1	20	35	73	4.37	53	50	25
Supervise removal of obstacles using engineer equipment	0	2	16	50	62	4.32	61	47	21
Supervise cratering of roads during obstacle operations	0	2	13	56	59	4.32	96	18	15
Supervise disabling of bridges during obstacle operations	0	1	13	52	63	4.37	86	25	18
Plan/supervise construction of revetments	1	4	35	60	30	3.88	63	39	27
Plan/supervise construction of assault bunker	1	5	28	57	37	3.97	59	50	20
Plan/supervise construction of antitank ditch	0	0	26	43	60	4.26	73	32	23
Supervise construction of tracked vehicle fighting position	2	3	40	53	31	3.84	55	45	28
Supervise construction of artillery emplacements	2	2	46	50	29	3.79	50	51	27
Plan/site field fortifications	0	3	20	46	60	4.27	69	42	19
Coordinate with other combat arms for best use of terrain	2	4	16	40	67	4.29	29	81	19
Evaluate terrain using aerial photographs	1	3	21	60	43	4.10	40	67	22
Conduct reconnaissance for obstacle locations	2	3	18	57	49	4.15	65	41	23
Conduct engineering reconnaissance mission	1	2	11	42	73	4.43	72	41	16
Conduct hasty route reconnaissance	1	2	14	52	60	4.30	83	28	18
Conduct reconnaissance of enemy minefield	0	2	15	50	61	4.33	39	69	21
Prepare and disseminate an overlay	1	3	22	60	43	4.09	64	42	23
Supervise camouflage of organic vehicles/equipment	1	2	33	54	39	3.99	69	39	21

Combat Engineer Tasks	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Advise on employment of scatterable mines	1	8	14	46	60	4.21	36	68	26
Supervise preparation of decoy fighting positions	2	18	50	45	14	3.40	51	46	32
Supervise installation of booby traps	3	9	36	45	36	3.79	65	48	16
Supervise assault breach	1	0	14	34	80	4.49	51	59	19
Supervise installation of minefields	0	2	5	42	81	4.55	83	37	10
Prepare/process minefield recording forms	0	3	11	42	74	4.44	86	24	19
Plan the installation of minefields	0	3	4	42	81	4.55	76	36	17
Supervise clearing of booby traps	2	5	26	38	59	4.13	55	46	28
Supervise installation of the M16A1 antipersonnel mine	0	5	27	38	58	4.16	97	13	18
Supervise disarming of the M16A1 antipersonnel mine	3	10	26	37	53	3.98	83	21	24
Supervise installation of the M15 heavy antitank mine	1	4	23	42	59	4.19	97	12	19
Supervise disarming of the M15 heavy antitank mine	3	9	25	37	55	4.02	85	19	24
Supervise installation of hasty protective minefields	0	2	11	39	78	4.49	74	40	15
Supervise deliberate breach	0	0	13	40	77	4.49	73	34	22
Supervise minefield clearing operations	0	2	11	34	83	4.52	64	45	20
Supervise reconnaissance of a demolition target	2	3	25	47	52	4.12	58	40	31
Prepare target folders (nonnuclear)	5	5	39	55	26	3.71	36	51	41
Conduct route clearance operation using explosives	1	1	19	65	44	4.15	65	38	26
Enforce explosive and demolition safety requirements	0	1	12	38	79	4.50	96	18	15
Clear land with demolitions	0	6	39	49	36	3.89	88	20	20
Supervise calculation and placement of military explosives	0	2	13	52	62	4.35	99	17	13
Create obstacles using explosives	0	2	16	38	74	4.42	86	31	12

	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Plan earthmoving operations using a mass diagram	2	10	57	38	20	3.50	45	52	32
Plan/supervise cut and fill operations	1	7	53	45	22	3.63	57	54	17
Plan/supervise backfill and compaction operations	0	8	51	44	25	3.67	53	60	16
Improve soils by stabilization	2	11	46	42	27	3.63	40	73	16
Design culverts	1	10	36	54	27	3.75	79	35	15
Plan/supervise construction of fords	0	9	31	56	30	3.85	50	56	22
Plan/supervise maintenance of earth roads	0	3	32	56	36	3.98	69	45	15
Install expedient surfaces	1	5	47	45	29	3.76	53	51	25
Conduct ice/snow removal operations	3	17	58	31	16	3.32	31	68	30
Develop a reinforcing steel schedule	10	25	54	21	15	3.05	26	65	38
Delineate and estimate drainage areas	4	14	48	38	23	3.49	59	50	20
Design open channels	9	15	55	28	19	3.26	53	49	27
Select erosion controls	2	21	54	29	21	3.36	41	59	29
Plan/supervise construction of combat roads and trails	0	4	22	48	53	4.18	70	43	16
Perform rapid runway repair	0	5	25	51	45	4.08	36	69	24
Plan/supervise construction and maintenance of combat roads and trails	0	3	25	53	47	4.13	71	40	18
Supervise use, accountability, and maintenance of engineer handtools	1	5	52	35	35	3.77	80	33	16
Design a boom derrick	9	26	62	20	10	2.97	62	38	28
Compute concrete mix design based on given strength requirements	5	11	45	49	17	3.49	69	37	23
Design concrete formwork	5	9	48	44	22	3.54	75	32	22

	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Interpret plans and specifications	0	5	26	53	44	4.06	64	47	18
Plan construction of theater of operations building	4	17	45	39	22	3.46	57	46	26
Supervise construction of theater of operations building	5	18	39	42	23	3.47	63	42	24
Plan/supervise construction of concrete pad	2	13	42	44	27	3.63	86	28	15
Plan/supervise construction of vertical concrete wall	3	17	44	41	23	3.50	69	44	16
Design electrical distribution system	2	16	32	47	30	3.69	36	70	23
Lay out a troop camp	1	12	35	49	31	3.76	57	49	23
Inspect maintenance of pioneer tool sets	1	10	37	43	37	3.82	89	26	14
Inventory platoon tools	2	12	43	37	34	3.70	85	24	19
Inspect maintenance of fiber/wire rope and rigging equipment	2	15	41	46	23	3.58	58	44	27
Define key events/activities and establish milestones	1	6	26	39	56	4.12	57	47	25
Establish time requiremtnes and develop master schedule	2	5	29	45	46	4.01	46	57	26
Review project work progress in relation to plans, schedules, and costs	2	7	28	50	41	3.95	50	55	24
Modify/update plans, schedules, and budgets	1	7	34	51	35	3.88	43	56	30
Identify and analyze project work problems	2	4	27	51	44	4.02	47	51	31
Estimate a project duration	1	8	32	43	44	3.95	56	43	30
Analyze construction directives	2	17	35	46	26	3.61	47	46	36
Conduct construction site investigation	3	13	26	54	31	3.76	50	50	28
Estimate requirements for personnel and equipment for a construction project	1	6	22	44	55	4.14	62	48	19
Prepare critical path networks	5	9	48	37	29	3.59	66	39	24

	Relative Importance						Training Adequacy		
	1	2	3	4	5	Mean	Yes	No	Und
Organize construction work forces	1	6	28	52	41	3.98	69	39	27
Prepare construction reports	2	16	45	42	23	3.53	58	44	27
Conduct construction inspections	4	6	32	52	34	3.83	53	46	30
Prepare quality control plans	6	16	36	46	24	3.52	33	60	36
Monitor project execution and quality control by observation and reports review	4	12	37	45	30	3.66	38	55	36
Coordinate construction project plans	4	6	34	54	30	3.78	51	47	31
Estimate construction materials	1	2	27	52	46	4.09	70	35	24
Select water point site from maps/photos	0	4	20	50	52	4.19	53	54	22
Coordinate employment of Navy Mobile Construction Battalion (NMCB) assets	7	14	40	44	22	3.47	19	84	26
Coordinate engineer supply and resupply activities	1	3	26	49	49	4.11	39	64	25
Construct advanced landing fields (EAF)	4	6	24	53	40	3.94	40	68	22
Prepare landing sites for helicopter/VTOL operations	0	5	17	50	54	4.21	56	57	19
Direct installation/employment of fuel systems (AAFS/TAFDS)	0	6	32	45	44	4.00	33	76	23
Employ your forces as infantry	2	4	27	48	47	4.05	72	42	18
Employ engineer elements in special operations in cold weather, jungle, or desert environments	2	3	25	38	59	4.17	29	82	21
Advise the supported commander on the proper employment of combat engineers in support of offensive/, defensive operations	0	2	4	14	107	4.78	34	83	15

Appendix Y: General Comments of Respondents

O-1 (Second Lieutenant)

- All of my education helped train me, but OJT is where all the knowledge is retained.

- I am currently assigned as the -- Platoon Commander, -- Bulk Fuel Company, -- Engineer Support Battalion, -- FSSG.

- The entire Marine Corps program for training their basic engineer officers should be totally restructured. Seven weeks of classroom with very little practical application was no way to train anyone in engineering skills. In the one year I have been on --------, the major training I have received was from OJT and from studying my field manuals and technical manuals religiously. I had to work hard if I wanted to survive, since I was taught so little at the CEOC. I have successfully supported infantry battalions, supervised work projects, trained my men in the field, and taught both Royal Thai Marines and Royal Malaysian Army engineers our techni[illegible]s. The reason why I have stated this is to give you and others an i[illegible] of what a new 2nd Lt is sometimes expected to do. MCES did not help me prepare for any of this. Foreign countries train their engineer officers longer and more thoroughly than the Marine Corps has trained me. It is a crime that we do not have the proper time and training to get a solid background in all aspects of engineering skills. To alleviate the problem, a possible course of action is to structure the CEOC like the journeyman course. It would give us more time to cover more aspects of combat engineering as well as give us more chances for practical application. Practical application is the key to all successful training.

O-2 (First Lieutenant)

- Most of my experience is OJT. Most Combat Engineer Officers are in agreement with me. It is also widely agreed that the CEOC did nothing to prepare us for the FMF in terms of real-life situations.

- My responses are based on civil engineering background in college which prepared me extremely well for all areas associated with planning and construction. I do not believe that the CEOC begins to properly prepare individuals for all the tasks listed.

- Too often engineer units are employed as infantry because no one knows what else to do with us. This should be cut way down. If we are going to be engineers, let's do it. Let's take a look at the naval construction battalions and see what they do.

- The CEOC fools itself into thinking that it produces civil engineers. The requirements of Marine Corps engineers call for temporary, expedient structures, trails, emplacements, etc., that are hastily constructed out of anything available. Has anyone ever heard of preparing a quality control plan for a bunker constructed of sandbags, ration boxes and ammunition cans? It is ludicrous to think that any such detailed planning is required. The Marine Corps needs to get out of the "great pyramids" frame of mind and get back to expedient engineering for the expeditionary force they pretend to be.

- Learning how to advise the supported commander on the proper employment of combat engineers took much of my own OJT and research. It was often a "sink or swim" situation during the first two months I had a combat engineer platoon.

- Without my background in agricultural education, which provided me with construction, concrete, electrical, surveying, and heavy equipment knowledge, I would have been totally ill-prepared to assume my role as an engineer officer.

- Overall, I believe that TBS did an excellent job in preparing me for the FMF. The areas of logistics, physical training, and organization and staff functioning should receive more emphasis. Physical training is the cornerstone of an effective fighting force. While I attended TBS there was no regular PT schedule. It is a well-known scientific fact that physical exercise should be vigoruous and performed regularly. An organized unit run once a month provides limited physical benefits.

While in my present assignment I have had the opportunity to go TAD to the operations section of a CSS element of a MAGTF. The lack of knowledge in the areas of logistics and CSS functions, even in the field grade ranks, was surprising.

The last area of TBS that should receive more emphasis is organization and staff functioning. I believe the ideal package that could be presented is the staff planning course taught at Landing Force Training Command, Pacific. The course gave me a much better insight into staff organization and functioning. I think the opportunity to be a staff officer and work through the planning process is a more valuable learning tool than the lectures presented at TBS.

The CEOC provided an all-encompassing view of the engineer field. I selected "undecided" for so many training areas because I have not been called on to use my skills in those areas. However, due to my engineering background, I feel confident that, given adequate time to train Marines in those areas, I could assemble a crew to accomplish any task. Several other areas of combat engineer tasks require further comment. Given the importance that minefield warfare has played in recent history, I believe that more emphasis should be placed on this area. It seems that safety considerations handcuff us from practicing our trade. "Supervise the employment of combined arms in obstacle breaching operations" is a task that is not taught in the engineer course, and in 26 months at the --------- it has never been practiced. I feel strongly that calls for fire and air should be taught to engineer

officers. Pity the poor engineer on a Mobile Obstacle Detachment (MOD) without a FAC or FO who needs timely, accurate fire support. Likewise, the employment of supporting arms in assault breaching, and assault breaching in general, should be taught at the Infantry Officer Course (IOC).

O-3 (Captain)

- Commanders often expect miracles which just cannot be performed with the assets and manpower available. I have also found that many are unwilling to listen or just disregard the advice given. Of course, that is the commander's option. Other MOSs just do not have a good understanding of the combat engineer mission or capabilities.

- While I was at Ft. Belvoir, the Army was talking about two engineer MOSs: combat and facilities. I personally think the idea has merit. Also, attendance at the EOAC should be mandatory for Marine Corps engineers. Those engineer officers who have not attended are, from my experience, behind the eight ball.

- I think that the biggest problems engineers have are lack of money for adequate and realistic training in the FMF and ignorance on the part of supported units of the capabilities and assets of engineer units. Marine engineers should be employed around bases much like the Navy SeaBee's are -- as professional construction units. My year in the FMF as an engineer leads me to believe that we have become "paper tigers." Assets are so short as to be nonexistent or too precious to use for training. It is too late to become proficient in engineer skills when involved in a hostile environment. An engineer officer has to sell his capabilities.

- Many of these questions relate to tasks which are beyond the skill levels of graduates of the CEOC, and will only be acquired by those of us who attend EOAC at Ft. Belvoir. It must also be noted that there exists no doctrine that specifically addresses how to reorganize Marine engineers and employ them as infantry.

- The Marine Corps does not provide enough practice materials for combat engineers to sufficiently train. I was on an exercise with -------- that was a disorganized mess. We had to do an enormous amount of road and mine work with extremely poor equipment. We were told to set a minefield, but no practice mines were available. We were told to use tin ration cans. Realism was impossible.

- A new 2nd Lt finds himself on deployment with his combat engineers platoon and elements of bulk fuel, utilities, and motor transport. Company grade officers need more in-depth training in all aspects of field engineering.

- In my nine years as an engineer officer I have not had the opportunity to serve as a combat engineer. I have only been a 1310.

- The most critical element for the young engineer officer to know is how to advise the supported commander on the proper employment of combat engineers. He must also be aware of the importance of the combat engineer in staff planning procedures.

- After filling out this questionnaire, I feel inadequate. I feel that most of what I have learned is the result of some good SNCOs who have taken the time to teach me and, unfortunately, an occassional officer who wanted to help and had the time. The CEOC was too quick and dirty with not enough emphasis on the use and employment of engineers and engineer assets.

- Supported commanders only hear the words "machine guns" and assume you are infantry anyway. They deploy you the way they want, not necessarily by doctrine.

- The problem with training Marine Corps engineers during exercises is that due to the time and resources available, engineer play is almost always constructive. Hence, there is no way to practice what we learn. By the time we do get to practice a skill, we have forgotten all formal schooling and have to learn from scratch. Training engineers requires enormous logistical efforts. It has been my experience that the "powers that be" simply are not willing to incur the cost in time and/or resources. This is a complex problem.

- Balancing the requisite skills an engineer should possess (this task sheet is an excellent example of those skills) with the actual time spent working on these tasks will vividly illustrate the inadequacy of our engineer training.

- As a general note, OJT has been my best source of education and training. However, it is slow and expensive. By slow, I mean that I have been thrust into positions without adequate formal training. By the time I have been able to become conversant and understand the system (such as facilities) enough to participate and manipulate it, it has been almost time to rotate. This educational process is expensive in lost opportunity costs. A system of OJT combined with seminars seems to be a more cost-effective method of education. A thorough discussion of this area would require a major thesis.

- No one source best prepared me to be an engineer officer in the Marine Corps. Any attempts to become proficient in the MOS were done in spite of rather than with the help of the Marine Corps Engineer School. Civilian education helped some, as did TBS. OJT helped some, and reading doctrinal publications still brings me "up-to-speed" to this day. I know that a quantum leap forward was taken on 1 October 1983 with the implementation of the new program of instruction. The course that I attended five years ago was incomplete and often embarassing for the instructors. It will take much effort to develop an adequate base of knowledge within the current officer and SNCO corps in this MOS to satisfactorily perform our mission.

- Although I would be comfortable completing almost all of the tasks listed, I answered negatively in many cases. This is because as a 2nd Lt coming to the FMF I do not feel that these tasks had been covered or covered adequately in formal or informal training. Having four years of civilian education in engineering and another five years of Marine Corps experience is not the point in time that a platoon commander attached to a BLT needs to be proficient in these tasks. He needs that knowledge now. His position is even more precarious because, unlike his contemporaries in the infantry, he probably does not have a captain, major, or higher ranking officer who knows the field to turn to for direction or help. He is expected to be the duty expert under fire.

- We should stress to our young engineer officers that we are a combat arm and show them where we fit in the overall picture. There is a tendancy to send our engineer platoons on deployments without showing them where they fit in the battalion operations plan. Our lieutenants are working with captain infantry officers who have been to AWS and have been trained to do their thing.

- I suggest that seminars on engineer employment and training management be conducted for engineers. The Army Corps of Engineers has an office of some 10 people who develop training/lessons for combat engineers. Perhaps if lesson plans were standardized and made available more training would be conducted.

- The training of engineer officers should be increased. The amount of or the importance of the engineer in the field is underestimated. The amount of subjects required for an engineer officer to know cannot be taught in the short time at the CEOC. When attached to a unit, the 1302 is the sole expert on engineer matters. He has to have the information/answers for the commander concerning utilities, bulk fuel, engineer equipment, and maintenance, none of which is his primary job.

- The CEOC gave me the basic information that was needed to discuss combat engineer matters with my superiors and with my subordinates. I estimate that it left me at a level of competence equal to an average engineer sergeant. There is only one area where I feel that more training at the CEOC is lacking. I was not properly prepared to serve as the staff engineer with an infantry battalion. I feel that it would be very useful to design and teach a course on the mission, planning and responsibilities that an engineer officer will face as a special staff officer for the infantry battalion.

- One area that TBS and the CEOC did not prepare me for was infantry support and the engineer's place in the overall picture. I found it imperative that a young engineer officer have a commanding knowledge of infantry operations and be able to advise the infantry commander of how engineers can provide the required support. All too often engineers are pushed aside and forgotten. An engineer officer must be forceful and has to develop a sales technique.

O-4 (Major)

- As a graduate of the EOAC I feel that the schooling there covers all of your questions. The CEOC covers very few. If an engineer does not get to attend Ft. Belvoir, there is much necessary training that is missed.

- Include that I did attend the EOAC at Ft. Belvoir. That, I feel, was superior to any other MOS training I have received. I feel confident of my abilities in all areas because of that course.

- I believe that Marine Corps engineer officers receive insufficient training in logistics. We are also called upon regularly to provide advice/assistance with the installation of field messes, particularly grease pits, sanitation requirements, etc. I have not seen any training on this.

Technical expertise is only half the battle. Realizing your responsibilities to your Marines rounds it out.

- I think the difficulty is to teach engineer officers to think. They must learn not to ask a commander what engineer support he wants, but rather to tell the commander what support is needed and recommend/ initiate the best courses of action.

- If more officers were sent to the EOAC then more engineering skills would be realized.

- Common sense should be stressed along with technical knowledge.

- Overall, the Combat Engineer Officer is poorly trained and inexperienced in all or most tasks listed. Although the basics are presented at both MCES and EOAC, the combat engineer has little or no opportunity to practice or develop needed skills to perform many of these tasks. Comapny grade engineers receive little opportunity during field exercises to practice or perform their skills due to training, environmental or logistical restrictions. More emphasis on engineering is needed at all levels.

- Only those fortunate enough to have completed the EOAC can hope to become proficient in these tasks.

- I feel that most new lieutenants have a reasonable understanding of the Marine Corps and a basic grasp of engineer functions. The schools should put more emphasis on the "how-to" of engineer support, in addition to the "what-to," especially in regard to support of combined arms operations. The lieutenant should understand that he will have to approach the supported commander as a salesman, pushing effective use of his assets rather than waiting for taskings.

- My comments may appear to be quite negative in Part III. My experience is that those few officers who have an engineering degree or

background plus have attended the EOAC are well prepared for any engineer task. Those without that background are ill-prepared to handle tasks that OJT has not prepared them for. Many tasks can only be learned through practical application.

- Although EOAC covered in detail many aspects a Marine Corps engineer officer will never be associated with, it provided the background to appreciate virtually every aspect of engineer operations. I feel it has proven extremely useful in providing me with the "big picture," especially in terms of planning a supporting operation on any level.

O-5 (Lieutenant Colonel)

- The question we need to answer is: what do company grade 1302's need to know to do what they should be doing when they go to war? This is very different than training them to perform the tasks they most often perform in peacetime, which are frequently cheap ways to accomplish self-help projects.

- My personal perception is that we do not give our officers enough training. To my knowledge, we are the only service that does not require a degree in engineering to even open the door. That is not all bad, but some compensation needs to be made.

- I currently carry the 0402 primary MOS. I changed basically because of my previous experience in logistics and the lack of what I felt were rewarding jobs for 1302's at and above the LtCol level. At the present time there is too much to learn in each of the communities to provide a good career pattern and and anywhere near the skills required to perform well. I personally feel that we need three subspecialties, one for each type of battalion. Facilities should be a 1302 MOS and should serve as a career enhancing assignment. We should also target HQMC (Code LF) as an engineer star.

- Engineer officers never receive adequate training because engineer effort is so often constructive to allow the exercise/operation to proceed on schedule. Due to material shortages, costs, and environmental concerns the engineer requirements can never be achieved.

- My emphasis is obviously on combat engineering. I feel that we spend too much time on formal construction and not enough time on combat/expedient construction. There is a tendency to be too dependent on equipment and not to use local materials, but wait for "good" materials. We really need to educate the officers to communicate effectively with supported units and sell themselves and their abilities as engineers.

O-6 (Colonel)

- All this emphasis on technical knowledge makes officers think they are more knowledgable than SNCOs. We need less on specifics and more on practical problem solving.

- The problem is lack of practical application. After school, commanders do not want to get involved in training their young officers.

- My engineering studies at school provided me with a great deal of preparation in civil engineering, design, construction methods and procedures. TBS and the CEOC were just familiarization courses, and they did not really prepare me too much for engineering duties. OJT and correspondence courses on my own were the sources of training the helped me the most.

- If we rely on institutions for training, we will all be in school for 20 years. Schools are useful, but they are not responsible for a Marine's success. He is ultimately responsible. If he is willing to work hard and put in the hours, he will succeed without schooling. Conversely, no amount of schooling will make a lazy, selfish man better prepared.

- In my experience, the greatest challenge was not in learning the technical skills, but in learning how to anticipate requirements.

- The best schooling for a young lieutenant would be to make him an assistant platoon commander as a 2nd Lt for a two-week period, followed by 10 days of school and a three-day practical exam.

Appendix Z: Results of Analyses of Variance — Company Grade Officer Perceptions About the Relative Importance of Course Areas Taught at The Basic Officer Course by Perceptions of Training Adequacy

Course Area	F Prob	Group	Count	Mean	Standard Deviation
Personnel/General Administration	0.036	No	100	4.457	0.855
		Yes	103	4.184	0.842
		Undec	23	4.545	0.739
Logistics	0.000	No	150	4.375	0.883
		Yes	55	3.818	0.863
		Undec	22	3.857	0.910
Management	0.040	No	81	4.301	0.852
		Yes	120	3.975	0.930
		Undec	28	4.115	0.864
Tactics	0.009	No	19	4.571	0.598
		Yes	192	4.224	0.942
		Undec	18	3.647	1.057
Combat Intelligence	0.000	No	107	4.027	0.943
		Yes	84	3.429	0.960
		Undec	37	3.306	0.980
Nuclear, Biological, Chemical Warfare	0.000	No	143	4.414	0.917
		Yes	66	3.727	0.887
		Undec	20	3.263	0.933
Communications	0.005	No	85	4.368	0.837
		Yes	126	3.960	0.916
		Undec	18	4.118	0.928
Organization and Staff Functioning	0.000	No	96	4.235	0.894
		Yes	109	3.587	0.935
		Undec	24	3.783	0.998
Supporting Arms	0.002	No	72	4.280	1.034
		Yes	131	3.817	1.029
		Undec	25	3.625	0.970
First Aid	0.018	No	31	4.469	0.621
		Yes	178	4.017	0.983
		Undec	19	3.789	0.855

Appendix AA: Results of Analyses of Variance -- Field Grade Officer Perceptions About the Relative Importance of Course Areas Taught at The Basic Officer Course by Perceptions of Training Adequacy

Course Area	F Prob	Group	Count	Mean	Standard Deviation
Logistics	0.001	No	83	4.512	0.784
		Yes	26	3.923	0.744
		Undec	19	4.053	0.705
Management	0.001	No	59	4.356	0.783
		Yes	40	3.750	0.899
		Undec	30	3.733	0.980
Aviation	0.025	No	38	3.789	0.875
		Yes	66	3.621	0.739
		Undec	25	3.280	0.723
Tactics/Infantry Weapons	0.030	No	13	4.846	0.376
		Yes	100	4.270	0.802
		Undec	16	4.500	0.730
Combat Intelligence	0.001	No	49	4.162	0.825
		Yes	60	3.550	0.852
		Undec	20	3.800	0.951
Nuclear, Biological, Chemical Warfare	0.002	No	69	4.319	0.931
		Yes	37	3.676	0.852
		Undec	23	4.000	0.853
Organization and Staff Functioning	0.014	No	52	4.038	0.907
		Yes	59	3.576	0.792
		Undec	18	3.722	0.669
Supporting Arms	0.000	No	37	4.541	0.650
		Yes	69	3.826	0.874
		Undec	23	4.217	0.736
First Aid	0.005	No	12	4.667	0.492
		Yes	98	3.806	0.904
		Undec	19	3.684	0.946
History/Tradition	0.009	No	12	4.667	1.115
		Yes	102	3.314	0.944
		Undec	14	3.071	0.997

Appendix BB: Results of Analyses of Variance — Company Grade Officer Perceptions About the Relative Importance of Tasks Taught at the Combat Engineer Officer Course by Perceptions of Training Adequacy

Task	F Prob	Group	Count	Mean	Standard Deviation
Bridging gaps	0.001	No	104	4.585	0.914
		Yes	95	4.095	1.121
		Undec	21	3.905	1.136
Reducing obstacles	0.001	No	85	4.701	0.733
		Yes	115	4.357	0.919
		Undec	22	4.045	1.046
Maintaining lines of communications	0.000	No	127	4.377	0.790
		Yes	65	3.938	0.998
		Undec	29	3.724	1.131
Establishing tactical landing zones	0.001	No	120	4.163	0.944
		Yes	76	3.816	1.140
		Undec	26	3.400	0.957
Plan obstacles	0.000	No	118	4.707	0.637
		Yes	85	4.429	0.973
		Undec	18	3.667	1.328
Employ minefields	0.003	No	77	4.704	0.732
		Yes	120	4.305	0.938
		Undec	25	4.160	1.281
Construct obstacles	0.000	No	110	4.655	0.652
		Yes	91	4.363	0.925
		Undec	21	3.857	1.315
Constructing field fortifications	0.040	No	107	4.523	0.904
		Yes	87	4.345	0.790
		Undec	30	4.067	1.112
Applying counter-surveillance measures	0.001	No	143	3.861	1.028
		Yes	51	3.840	0.934
		Undec	30	3.100	1.155
Masking unit movements	0.000	No	150	4.053	1.009
		Yes	49	3.918	1.096
		Undec	24	3.000	1.063

Task	F Prob	Group	Count	Mean	Standard Deviation
Use of equipment technical publications	0.007	No	135	4.426	0.891
		Yes	69	4.014	0.978
		Undec	21	4.048	1.071
Requisitioning of repair parts	0.017	No	155	4.487	0.940
		Yes	53	4.151	0.969
		Undec	17	3.941	1.249
Completion of equipment records	0.005	No	146	4.422	0.906
		Yes	62	3.950	1.032
		Undec	17	4.059	1.298

Appendix CC: Results of Analyses of Variance -- Field Grade Officer Perceptions About the Relative Importance of Tasks Taught at the Combat Engineer Officer Course by Perceptions of Training Adequacy

Task	F Prob	Group	Count	Mean	Standard Deviation
Constructing field fortifications	0.002	No	44	4.711	0.506
		Yes	68	4.265	0.725
		Undec	17	4.412	0.712
Applying counter-surveillance measures	0.005	No	53	4.167	0.771
		Yes	40	3.725	0.816
		Undec	36	3.667	0.793
Masking unit movements	0.000	No	59	4.200	0.860
		Yes	35	3.629	0.910
		Undec	35	3.543	0,852
Construction of base camps	0.000	No	57	4.169	1.003
		Yes	50	3.580	0.883
		Undec	21	4.524	0.602
Use of equipment technical publications	0.000	No	61	4.468	0.646
		Yes	47	3.766	0.865
		Undec	21	3.714	0.845
Requisitioning of repair parts	0.000	No	67	4.382	0.811
		Yes	41	3.512	0.925
		Undec	21	3.667	0.966
Completion of equipment records	0.000	No	58	4.322	0.860
		Yes	54	3.556	0.883
		Undec	17	3.824	0,809

Appendix DD: Results of Analyses of Variance -- Company Grade Officer Perceptions of Relative Time Spent Performing Combat Engineer Officer Tasks by Assignments To Engineer-Type Commands

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Advise on employment of scatterable mines (F Prob .000)	CEB	68	.97	1.02	.12
	ESB	42	.36	.62	.10
	WES	12	.17	.39	.11
	ALL	7	1.00	1.15	.44
	CEB+ESB	40	.65	.86	.14
	CEB+WES	29	.62	.62	.12
	ESB+WES	21	.29	.56	.12
	TOTAL	219	.64		
Supervise assault breach (F Prob .000)	CEB	69	1.96	.99	.12
	ESB	42	.98	1.05	.16
	WES	12	.67	.98	.28
	ALL	7	1.43	.98	.37
	CEB+ESB	40	1.45	1.08	.17
	CEB+WES	29	1.38	1.01	.19
	ESB+WES	21	.81	1.03	.22
	TOTAL	220	1.40		
Supervise installation of minefields (F Prob .000)	CEB	69	1.71	1.07	.13
	ESB	42	.74	.96	.15
	WES	12	.58	1.00	.29
	ALL	7	1.86	1.07	.40
	CEB+ESB	40	1.38	1.15	.18
	CEB+WES	29	1.38	1.05	.19
	ESB+WES	21	.29	.64	.14
	TOTAL	220	1.23		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Prepare/process minefield recording forms (F Prob .000)	CEB	69	1.86	1.05	.13
	ESB	42	.86	.98	.15
	WES	12	.58	1.00	.29
	ALL	7	1.57	1.27	.48
	CEB+ESB	39	1.28	.94	.15
	CEB+WES	29	1.34	.90	.17
	ESB+WES	21	.67	.97	.21
	TOTAL	219	1.30		
Plan the installation of minefields (F Prob .000)	CEB	69	1.88	1.05	.13
	ESB	42	.90	.98	.15
	WES	12	.50	.90	.26
	ALL	7	1.71	1.38	.52
	CEB+ESB	40	1.27	1.04	.16
	CEB+WES	29	1.48	.91	.17
	ESB+WES	21	.71	.96	.21
	TOTAL	220	1.34		
Supervise clearing of booby traps (F Prob .000)	CEB	69	1.55	.98	.12
	ESB	42	.81	.97	.15
	WES	12	.25	.45	.13
	ALL	7	1.14	1.07	.40
	CEB+ESB	40	1.27	.93	.15
	CEB+WES	29	1.00	.80	.15
	ESB+WES	21	.67	.73	.16
	TOTAL	220	1.12		
Supervise installation of the M16A1 antipersonnel mine (F Prob .006)	CEB	69	1.42	1.13	.14
	ESB	42	.67	.87	.13
	WES	12	.50	.90	.26
	ALL	7	1.29	1.11	.42
	CEB+ESB	40	.95	.81	.13
	CEB+WES	29	1.14	.95	.18
	ESB+WES	21	.57	.81	.18
	TOTAL	220	1.02		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Supervise disarming of the M16A1 antipersonnel mine (F Prob .001)	CEB	69	1.33	1.09	.13
	ESB	42	.67	.93	.14
	WES	12	.50	.90	.26
	ALL	7	1.29	1.11	.42
	CEB+ESB	40	.92	.83	.13
	CEB+WES	29	.93	.92	.17
	ESB+WES	21	.43	.75	.16
	TOTAL	220	.95		
Supervise installation of the M15 heavy antitank mine (F Prob .000)	CEB	69	1.67	1.01	.12
	ESB	42	.67	.87	.13
	WES	12	.42	.90	.26
	ALL	7	1.29	1.11	.42
	CEB+ESB	40	1.02	.86	.14
	CEB+WES	29	1.07	.84	.16
	ESB+WES	21	.48	.75	.16
	TOTAL	220	1.09		
Supervise disarming of the M15 heavy antitank mine (F Prob .000)	CEB	69	1.62	1.00	.12
	ESB	42	.69	.92	.14
	WES	12	.42	.90	.26
	ALL	7	1.29	1.11	.42
	CEB+ESB	40	1.00	.85	.13
	CEB+WES	29	1.03	.87	.16
	ESB+WES	21	.48	.75	.16
	TOTAL	220	1.07		
Supervise installation of hasty protective minefields (F Prob .000)	CEB	69	1.94	.98	.12
	ESB	42	.83	.99	.15
	WES	12	.50	.67	.19
	ALL	7	1.43	1.27	.48
	CEB+ESB	40	1.52	1.06	.17
	CEB+WES	29	1.45	1.12	.21
	ESB+WES	21	.48	.68	.15
	TOTAL	220	1.35		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Supervise deliberate breach (F Prob .000)	CEB	69	1.78	1.01	.12
	ESB	42	.71	.99	.15
	WES	12	.33	.65	.19
	ALL	7	1.57	1.27	.48
	CEB+ESB	40	1.38	1.05	.17
	CEB+WES	29	1.31	1.00	.19
	ESB+WES	21	.33	.58	.13
	TOTAL	220	1.22		
Supervise minefield clearing operations (F Prob .000)	CEB	69	1.81	.94	.11
	ESB	42	.93	1.05	.16
	WES	12	.33	.49	.14
	ALL	7	2.00	1.41	.53
	CEB+ESB	40	1.35	1.10	.17
	CEB+WES	29	1.24	1.06	.20
	ESB+WES	21	.52	.87	.19
	TOTAL	220	1.29		
Supervise reconnaissance of a demolition target (F Prob .036)	CEB	69	1.23	.99	.12
	ESB	42	.81	.97	.15
	WES	12	.50	.80	.23
	ALL	7	1.00	1.15	.44
	CEB+ESB	40	1.05	.88	.14
	CEB+WES	29	1.24	1.06	.20
	ESB+WES	21	.67	.66	.14
	TOTAL	220	1.02		
Conduct route clearance operation using explosives (F Prob .001)	CEB	69	1.20	1.08	.13
	ESB	42	.52	.77	.12
	WES	12	.33	.49	.14
	ALL	7	.71	1.25	.47
	CEB+ESB	40	.92	.92	.14
	CEB+WES	29	.86	1.09	.20
	ESB+WES	21	.43	.68	.15
	TOTAL	220	.84		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Enforce explosive and demolition safety requirements (F Prob .000)	CEB	69	2.52	.90	.11
	ESB	42	1.64	1.12	.17
	WES	12	1.00	1.04	.30
	ALL	7	2.57	1.13	.43
	CEB+ESB	40	2.22	.92	.15
	CEB+WES	29	2.17	1.07	.20
	ESB+WES	21	1.43	1.03	.22
	TOTAL	220	2.07		
Supervise calculation and placement of military explosives (F Prob .023)	CEB	68	2.06	1.02	.12
	ESB	42	1.48	1.19	.18
	WES	12	1.25	.87	.25
	ALL	7	2.14	.90	.34
	CEB+ESB	40	1.88	.97	.15
	CEB+WES	29	1.69	1.14	.21
	ESB+WES	21	1.48	.75	.16
	TOTAL	219	1.77		
Creâte obstacles using explosives (F Prob .000)	CEB	69	1.71	1.07	.13
	ESB	42	.95	.99	.15
	WES	12	.67	.78	.22
	ALL	7	1.57	1.51	.57
	CEB+ESB	40	1.35	1.08	.17
	CEB+WES	29	1.14	1.06	.20
	ESB+WES	21	.62	.74	.16
	TOTAL	220	1.26		
Supervise employment of combined arms in obstacle breaching operations (F Prob .001)	CEB	69	1.07	1.06	.13
	ESB	42	.48	.77	.12
	WES	12	.25	.45	.13
	ALL	7	1.14	1.68	.63
	CEB+ESB	40	.85	.98	.15
	CEB+WES	29	1.03	1.02	.19
	ESB+WES	21	.24	.54	.12
	TOTAL	220	.79		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/supervise construction of antitank ditch (F Prob .000)	CEB	69	1.46	1.20	.14
	ESB	42	.76	.98	.15
	WES	12	.50	.90	.26
	ALL	7	1.71	1.60	.61
	CEB+ESB	40	1.63	1.15	.18
	CEB+WES	29	1.21	1.08	.20
	ESB+WES	21	.71	.90	.20
	TOTAL	220	1.21		
Plan/site field fortifications (F Prob .017)	CEB	69	1.36	1.00	.12
	ESB	41	1.02	.91	.14
	WES	12	.42	.51	.15
	ALL	7	1.43	1.40	.53
	CEB+ESB	40	1.47	1.06	.17
	CEB+WES	29	1.07	.92	.17
	ESB+WES	21	1.05	.86	.19
	TOTAL	219	1.20		
Coordinate with other combat arms for best use of terrain (F Prob .007)	CEB	69	1.30	1.08	.13
	ESB	42	.90	1.08	.17
	WES	12	.33	.89	.26
	ALL	7	1.29	1.50	.57
	CEB+ESB	40	1.20	1.04	.16
	CEB+WES	29	1.34	1.08	.20
	ESB+WES	21	.52	.98	.21
	TOTAL	220	1.09		
Conduct reconnaisance for obstacle locations (F Prob .001)	CEB	69	1.67	.93	.11
	ESB	42	1.17	1.01	.16
	WES	12	.50	.67	.19
	ALL	7	1.43	1.13	.43
	CEB+ESB	40	1.50	1.06	.17
	CEB+WES	29	1.52	1.02	.19
	ESB+WES	21	.86	1.06	.23
	TOTAL	220	1.37		

TASK	GROUP	COUNT	MEAN	STAND. CEV.	STAND. ERROR
Supervise removal of obstacles using engineer equipment (F Prob .011)	CEB	69	1.42	1.21	.15
	ESB	42	1.00	1.06	.16
	WES	12	.58	.67	.19
	ALL	7	1.86	1.77	.67
	CEB+ESB	40	1.47	.93	.15
	CEB+WES	29	1.76	1.15	.21
	ESB+WES	21	1.19	.87	.19
	TOTAL	220	1.34		
Plan/supervise construction of reinforcing obstacles using engineer equipment (F Prob .037)	CEB	69	1.43	1.13	.14
	ESB	42	1.14	1.07	.17
	WES	12	.75	.87	.25
	ALL	7	1.71	1.50	.57
	CEB+ESB	40	1.55	.93	.15
	CEB+WES	29	1.66	1.20	.22
	ESB+WES	20	.90	.91	.20
	TOTAL	219	1.35		
Supervise cratering of roads during obstacle operations (F Prob .000)	CEB	69	1.38	1.09	.13
	ESB	42	.62	.96	.15
	WES	12	.42	.51	.15
	ALL	7	1.71	1.25	.47
	CEB+ESB	40	1.42	1.01	.16
	CEB+WES	29	1.28	1.10	.20
	ESB+WES	21	.62	.80	.18
	TOTAL	220	1.11		
Supervise disabling of bridges during obstacle operations (F Prob .002)	CEB	69	.90	.99	.12
	ESB	42	.43	.70	.11
	WES	12	.08	.29	.08
	ALL	7	1.14	1.68	.63
	CEB+ESB	40	1.02	.97	.15
	CEB+WES	29	.62	.90	.17
	ESB+WES	21	.43	.81	.18
	TOTAL	220	.71		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Conduct engineering reconnaissance mission (F Prob .049)	CEB	69	1.74	.98	.12
	ESB	42	1.45	1.06	.16
	WES	12	1.08	1.00	.29
	ALL	7	1.43	1.27	.48
	CEB+ESB	40	2.02	1.00	.16
	CEB+WES	29	1.69	1.04	.19
	ESB+WES	21	1.38	1.07	.23
	TOTAL	220	1.65		
Conduct hasty route reconnaissance (F Prob .000)	CEB	69	1.59	1.00	.12
	ESB	42	1.14	.98	.15
	WES	12	.67	.78	.22
	ALL	7	.71	1.11	.42
	CEB+ESB	40	1.85	1.08	.17
	CEB+WES	29	1.45	.99	.18
	ESB+WES	21	1.00	1.00	.22
	TOTAL	220	1.40		
Conduct reconnaissance of enemy minefield (F Prob .000)	CEB	69	.94	1.01	.12
	ESB	42	.31	.68	.10
	WES	12	.08	.29	.08
	ALL	7	1.00	1.15	.44
	CEB+ESB	40	.88	.91	.14
	CEB+WES	29	.62	.90	.17
	ESB+WES	21	.29	.46	.10
	TOTAL	220	.66		
Prepare and disseminate an overlay (F Prob .000)	CEB	69	1.51	1.04	.12
	ESB	42	1.24	1.08	.17
	WES	12	.67	.78	.22
	ALL	7	2.14	.90	.34
	CEB+ESB	40	1.82	.93	.15
	CEB+WES	29	1.34	.90	.17
	ESB+WES	21	.76	.89	.19
	TOTAL	220	1.40		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Supervise camouflage of organic vehicles/ equipment (F Prob .034)	CEB	68	1.85	.92	.11
	ESB	42	1.62	1.13	.17
	WES	12	1.08	1.08	.31
	ALL	7	1.86	1.07	.40
	CEB+ESB	40	2.13	.97	.15
	CEB+WES	29	1.79	1.11	.21
	ESB+WES	21	1.43	1.08	.23
	TOTAL	213	1.77		
Conduct deliberate route reconnaissance (F Prob .013)	CEB	69	1.49	.99	.12
	ESB	42	1.12	.99	.15
	WES	12	.67	.78	.22
	ALL	7	1.00	1.15	.44
	CEB+ESB	40	1.57	1.13	.18
	CEB+WES	29	1.28	.92	.17
	ESB+WES	21	.86	.91	.20
	TOTAL	220	1.29		
Design M4T6 fixed span (F Prob .003)	CEB	69	.49	.74	.09
	ESB	42	.93	1.30	.20
	WES	12	.08	.29	.08
	ALL	7	1.29	1.60	.61
	CEB+ESB	40	.92	.89	.14
	CEB+WES	29	.34	.72	.13
	ESB+WES	21	.90	1.14	.25
	TOTAL	220	.68		
Plan/conduct rafting operations (F Prob .008)	CEB	69	.32	.65	.08
	ESB	42	.60	1.08	.17
	WES	12	0	0	0
	ALL	7	1.29	1.60	.61
	CEB+ESB	40	.67	.97	.15
	CEB+WES	29	.24	.58	.11
	ESB+WES	21	.67	1.06	.23
	TOTAL	220	.47		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/conduct float bridge operations (F Prob .004)	CEB	69	.39	.71	.09
	ESB	42	.81	1.21	.19
	WES	12	.17	.39	.11
	ALL	7	1.14	1.68	.63
	CEB+ESB	40	.85	1.05	.17
	CEB+WES	29	.21	.56	.10
	ESB+WES	21	.90	1.22	.27
	TOTAL	220	.59		
Plan/supervise construction of hasty helicopter landing zone (F Prob .009)	CEB	69	.94	1.03	.12
	ESB	42	.67	.79	.12
	WES	12	1.75	1.14	.33
	ALL	7	1.86	1.07	.40
	CEB+ESB	40	1.02	1.05	.17
	CEB+WES	29	1.07	1.16	.22
	ESB+WES	21	1.33	1.24	.27
	TOTAL	220	1.03		
Plan/supervise clearing, grubbing, and stripping operations (F Prob .004)	CEB	69	.78	.97	.12
	ESB	42	1.14	1.00	.15
	WES	12	1.50	1.31	.38
	ALL	7	1.57	1.27	.48
	CEB+ESB	40	1.35	1.10	.17
	CEB+WES	29	1.14	1.16	.21
	ESB+WES	21	1.81	1.17	.25
	TOTAL	220	1.16		
Plan earthmoving operations using a mass diagram (F Prob .005)	CEB	68	.38	.86	.10
	ESB	42	1.02	1.16	.18
	WES	12	1.08	1.44	.42
	ALL	7	.57	1.13	.43
	CEB+ESB	40	1.10	1.17	.19
	CEB+WES	29	.48	.99	.18
	ESB+WES	21	.95	1.02	.22
	TOTAL	219	.75		

TASK	GROUP	COUNT	MEAN	STAND. CEV.	STAND. ERROR
Plan/supervise cut and fill operations (F Prob .000)	CEB	68	.65	.99	.12
	ESB	42	1.48	1.15	.18
	WES	12	1.67	1.30	.38
	ALL	7	1.29	1.11	.42
	CEB+ESB	40	1.67	1.10	.17
	CEB+WES	29	1.07	1.16	.22
	ESB+WES	21	1.71	1.10	.24
	TOTAL	219	1.23		
Plan/supervise backfill and compaction operations (F Prob .000)	CEB	68	.62	1.01	.12
	ESB	42	1.50	1.11	.17
	WES	12	1.75	1.29	.37
	ALL	7	1.14	1.07	.40
	CEB+ESB	40	1.82	1.13	.18
	CEB+WES	29	1.17	1.23	.23
	ESB+WES	21	1.76	1.14	.25
	TOTAL	219	1.27		
Improve soils by stabilization (F Prob .002)	CEB	68	.49	.87	.11
	ESB	42	1.10	1.05	.16
	WES	12	1.17	1.34	.39
	ALL	7	.57	1.13	.43
	CEB+ESB	40	1.30	1.07	.17
	CEB+WES	29	.83	1.17	.22
	ESB+WES	21	1.19	.93	.20
	TOTAL	219	.90		
Design culverts (F Prob .003)	CEB	68	.75	.95	.12
	ESB	42	1.02	1.00	.15
	WES	12	1.58	1.08	.31
	ALL	7	1.43	1.27	.48
	CEB+ESB	40	1.42	.53	.15
	CEB+WES	29	1.00	1.07	.20
	ESB+WES	21	1.52	1.08	.24
	TOTAL	219	1.10		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/supervise maintenance of earth roads (F Prob .020)	CEB	68	.97	1.05	.13
	ESB	42	1.48	1.06	.16
	WES	12	1.42	1.24	.36
	ALL	7	1.71	.76	.29
	CEB+ESB	40	1.70	1.20	.19
	CEB+WES	29	1.45	1.21	.23
	ESB+WES	21	1.71	1.10	.24
	TOTAL	219	1.38		
Install expedient surfaces (F Prob .003)	CEB	67	.67	1.05	.13
	ESB	42	.81	.89	.14
	WES	12	1.75	1.29	.37
	ALL	7	1.29	1.11	.42
	CEB+ESB	40	1.42	1.11	.17
	CEB+WES	29	.97	1.24	.23
	ESB+WES	21	1.19	1.03	.22
	TOTAL	218	1.00		
Plan/supervise construction of combat roads and trails (F Prob .023)	CEB	69	.65	.97	.12
	ESB	42	1.02	1.02	.16
	WES	12	1.00	1.13	.33
	ALL	7	1.29	1.38	.52
	CEB+ESB	40	1.30	.97	.15
	CEB+WES	29	1.21	1.18	.22
	ESB+WES	21	1.33	1.02	.22
	TOTAL	220	1.02		
Perform rapid runway repair (F Prob .000)	CEB	69	.38	.84	.10
	ESB	43	.74	1.14	.17
	WES	12	1.83	1.47	.42
	ALL	7	1.29	1.89	.71
	CEB+ESB	40	1.13	1.26	.20
	CEB+WES	29	.55	.91	.17
	ESB+WES	21	1.00	1.18	.26
	TOTAL	221	.77		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/supervise construction and maintenance of combat roads and trails (F Prob .042)	CEB	69	.68	1.01	.12
	ESB	41	1.07	1.06	.17
	WES	12	1.17	1.27	.37
	ALL	7	1.14	1.21	.46
	CEB+ESB	40	1.35	1.08	.17
	CEB+WES	29	1.24	1.18	.22
	ESB+WES	21	1.29	1.01	.22
	TOTAL	219	1.05		
Design concrete formwork (F Prob .019)	CEB	69	.90	1.20	.14
	ESB	42	1.24	1.10	.17
	WES	12	1.25	1.22	.35
	ALL	7	1.57	.98	.37
	CEB+ESB	40	1.55	.96	.15
	CEB+WES	29	1.00	.85	.16
	ESB+WES	21	1.67	1.02	.22
	TOTAL	220	1.21		
Interpret plans and specifications (F Prob .002)	CEB	69	1.10	1.19	.14
	ESB	42	1.86	1.03	.15
	WES	12	1.67	1.07	.31
	ALL	7	2.00	.82	.31
	CEB+ESB	41	1.88	.93	.14
	CEB+WES	29	1.59	1.09	.20
	ESB+WES	21	1.86	1.28	.28
	TOTAL	221	1.58		
Plan/supervise construction of concrete pad (F Prob .021)	CEB	69	.93	1.19	.14
	ESB	42	1.43	1.06	.16
	WES	12	1.17	1.19	.34
	ALL	7	1.86	.90	.34
	CEB+ESB	40	1.63	1.03	.16
	CEB+WES	29	1.03	1.15	.21
	ESB+WES	20	1.55	1.36	.30
	TOTAL	213	1.26		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Lay out a troop camp (F Prob .029)	CEB	69	1.03	1.25	.15
	ESB	43	1.51	1.18	.18
	WES	12	1.58	1.16	.34
	ALL	7	1.43	.79	.30
	CEB+ESB	40	1.45	1.01	.16
	CEB+WES	29	1.62	1.21	.22
	ESB+WES	20	2.00	1.03	.23
	TOTAL	220	1.41		
Review project work progress in relation to plans, schedules, and costs (F Prob .008)	CEB	69	1.22	1.25	.15
	ESB	42	1.98	1.14	.18
	WES	12	2.00	1.35	.39
	ALL	7	1.57	.98	.37
	CEB+ESB	40	1.85	1.00	.16
	CEB+WES	29	1.76	.95	.18
	ESB+WES	21	2.00	1.14	.25
	TOTAL	220	1.68		
Modify/update plans, schedules, and budgets (F Prob .023)	CEB	69	1.19	1.28	.15
	ESB	42	1.95	1.06	.16
	WES	12	1.75	1.06	.30
	ALL	7	2.00	.82	.31
	CEB+ESB	41	1.76	1.04	.16
	CEB+WES	29	1.62	1.05	.19
	ESB+WES	21	1.76	1.34	.29
	TOTAL	221	1.61		
Identify and analyze project work problems (F Prob .000)	CEB	69	1.32	1.19	.14
	ESB	42	2.21	.95	.15
	WES	12	2.00	1.04	.30
	ALL	7	1.71	1.38	.52
	CEB+ESB	41	2.00	.87	.14
	CEB+WES	29	1.79	.94	.17
	ESB+WES	21	2.19	1.08	.24
	TOTAL	221	1.81		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Estimate a project duration (F Prob .005)	CEB	69	1.48	1.18	.14
	ESB	42	2.17	.53	.14
	WES	12	2.33	.98	.28
	ALL	7	1.43	.98	.37
	CEB+ESB	40	2.00	.93	.15
	CEB+WES	29	1.76	.87	.16
	ESB+WES	21	2.10	1.09	.24
	TOTAL	220	1.85		
Conduct construction site investigation (F Prob .000)	CEB	69	1.01	1.12	.13
	ESB	42	2.00	1.06	.16
	WES	12	1.83	1.11	.32
	ALL	7	1.29	1.25	.47
	CEB+ESB	40	1.85	.92	.15
	CEB+WES	29	1.41	1.02	.19
	ESB+WES	21	1.76	1.14	.25
	TOTAL	220	1.53		
Estimate requirements for personnel and equipment for a construction project (F Prob .000)	CEB	69	1.38	1.23	.15
	ESB	42	2.19	1.06	.16
	WES	12	2.25	.97	.28
	ALL	7	1.43	.98	.37
	CEB+ESB	40	2.20	.79	.13
	CEB+WES	29	2.03	.91	.17
	ESB+WES	21	2.00	1.14	.25
	TOTAL	220	1.88		
Organize construction work forces (F Prob .001)	CEB	69	1.38	1.25	.15
	ESB	42	2.24	1.05	.16
	WES	12	2.17	1.03	.30
	ALL	7	1.43	.98	.37
	CEB+ESB	40	2.05	.88	.14
	CEB+WES	29	2.00	1.00	.19
	ESB+WES	21	2.14	.96	.21
	TOTAL	220	1.86		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Prepare construction reports (F Prob .007)	CEB	69	.91	1.17	.14
	ESB	42	1.62	1.08	.17
	WES	12	1.75	1.06	.30
	ALL	7	1.29	1.11	.42
	CEB+ESB	40	1.63	1.05	.17
	CEB+WES	29	1.31	.93	.17
	ESB+WES	21	1.43	1.03	.22
	TOTAL	220	1.34		
Conduct construction inspections (F Prob .002)	CEB	68	1.04	1.24	.15
	ESB	42	1.86	1.12	.17
	WES	12	2.00	1.04	.30
	ALL	7	1.29	1.38	.52
	CEB+ESB	40	1.75	1.15	.18
	CEB+WES	29	1.69	1.07	.20
	ESB+WES	21	1.90	1.09	.24
	TOTAL	219	1.56		
Prepare quality control plans (F Prob .025)	CEB	69	.61	1.07	.13
	ESB	42	1.07	1.02	.16
	WES	12	1.33	1.15	.33
	ALL	7	.57	1.13	.43
	CEB+ESB	40	1.17	.96	.15
	CEB+WES	29	.62	.86	.16
	ESB+WES	21	.95	.97	.21
	TOTAL	220	.87		
Monitor project execution and quality control by observation and reports review (F Prob .005)	CEB	69	.77	1.14	.14
	ESB	42	1.14	1.00	.15
	WES	12	1.50	1.31	.38
	ALL	7	.86	1.07	.40
	CEB+ESB	40	1.57	1.11	.17
	CEB+WES	29	.90	.98	.18
	ESB+WES	21	1.48	1.12	.25
	TOTAL	220	1.11		

TASKS	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Coordinate construction project plans (F Prob .000)	CEB	69	.83	1.19	.14
	ESB	42	1.67	1.07	.17
	WES	12	1.92	1.24	.36
	ALL	7	1.43	1.27	.48
	CEB+ESB	40	1.72	1.04	.16
	CEB+WES	29	1.41	.98	.18
	ESB+WES	21	1.76	1.18	.26
	TOTAL	220	1.40		
Construct advanced landing fields (EAF) (F Prob .001)	CEB	68	.34	.77	.09
	ESB	42	1.02	1.20	.19
	WES	12	1.33	1.30	.38
	ALL	7	1.29	1.60	.61
	CEB+ESB	40	1.25	1.37	.22
	CEB+WES	29	1.07	1.28	.24
	ESB+WES	21	.90	1.18	.26
	TOTAL	219	.87		
Prepare landing sites for helicopter/VTOL operations (F Prob .001)	CEB	69	.84	.98	.12
	ESB	42	.67	.90	.14
	WES	12	2.00	1.21	.35
	ALL	7	1.57	1.13	.43
	CEB+ESB	40	1.17	1.01	.16
	CEB+WES	29	1.31	1.23	.23
	ESB+WES	21	1.33	1.15	.25
	TOTAL	220	1.06		
Direct installation/ employment of fuel systems (AAFS/TAFDS) (F Prob .000)	CEB	69	.43	.88	.11
	ESB	43	1.26	1.20	.18
	WES	12	1.33	1.07	.31
	ALL	7	2.00	1.41	.53
	CEB+ESB	40	1.27	1.20	.19
	CEB+WES	29	.93	1.07	.20
	ESB+WES	21	1.62	1.16	.25
	TOTAL	221	1.02		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Design Medium Girder Bridge (MGB) (F Prob .021)	ASSOC	12	.33	.65	.19
	BACC	128	.45	.87	.08
	BACC+	55	.38	.89	.12
	MASTERS	21	.29	.56	.12
	MASTERS+	6	1.67	1.51	.61
	OTHER	1	0	0	0
	TOTAL	223	.44		
Plan/supervise construction of hasty helicopter landing zone (F Prob .007)	ASSOC	12	.92	1.16	.34
	BACC	128	.81	.95	.08
	BACC+	55	1.36	1.19	.16
	MASTERS	21	1.48	1.12	.25
	MASTERS+	6	1.50	1.05	.43
	OTHER	1	1.00	0	0
	TOTAL	223	1.04		
Plan/supervise clearing, grubbing, and stripping operations (F Prob .026)	ASSOC	12	.92	1.31	.38
	BACC	128	1.03	.98	.09
	BACC+	55	1.58	1.23	.17
	MASTERS	21	.95	1.20	.26
	MASTERS+	6	1.50	1.22	.50
	OTHER	1	0	0	0
	TOTAL	223	1.16		
Plan/supervise maintenance of earth roads (F Prob .041)	ASSOC	12	.92	1.31	.38
	BACC	127	.37	.78	.07
	BACC+	55	.31	.66	.09
	MASTERS	21	.33	.58	.13
	MASTERS+	6	1.17	1.47	.60
	OTHER	1	0	0	0
	TOTAL	222	.40		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Employ your forces as infantry (F Prob .000)	CEB	69	1.94	1.03	.12
	ESB	43	1.44	1.01	.15
	WES	12	.92	1.08	.31
	ALL	7	1.71	1.11	.42
	CEB+ESB	40	1.92	1.07	.17
	CEB+WES	29	1.69	1.11	.21
	ESB+WES	21	.90	.54	.12
	TOTAL	221	1.65		
Advise the supported commander on the proper employment of combat engineers in support of offensive/defensive operations (F Prob .000)	CEB	69	2.23	1.10	.13
	ESB	42	1.29	1.09	.17
	WES	12	1.83	1.40	.41
	ALL	7	2.43	1.62	.61
	CEB+ESB	40	2.02	1.05	.17
	CEB+WES	29	2.41	1.02	.19
	ESB+WES	21	1.43	1.12	.24
	TOTAL	220	1.95		

Appendix EE: Crosstabulation Tables -- Company Grade Officer Perceptions About Training Adequacy by Assignment to Engineer-Type Commands

Q211- Supervise assault breach

Q13 (COUNT / TOT PCT)		No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	1 .4	1 .4	1 .4	3 1.3
CEB	1.	37 16.4	31 13.7	1 .4	69 30.5
ESB	2.	21 9.3	17 7.5	6 2.7	44 19.5
WES	3.	3 1.3	6 2.7	3 1.3	12 5.3
ALL	4.	3 1.3	2 .9	2 .9	7 3.1
CEB+ESB	5.	18 8.0	19 8.4	3 1.3	40 17.7
CEB+WES	6.	15 6.6	15 6.6	0 0	30 13.3
ESB+WES	7.	15 6.6	3 1.3	3 1.3	21 9.3
COLUMN TOTAL		113 50.0	94 41.6	19 8.4	226 100.0

RAW CHI SQ = 27.88044 WITH 14 D.F., SIG. = .0148

Q210- Supervise installation of booby traps

COUNT / TOT PCT		No 0	Yes 1.	Und 2.	ROW TOTAL
Q19					
NONE	0	1 .4	1 .4	1 .4	3 1.3
CEB	1.	28 12.3	40 17.6	2 .9	70 30.8
ESB	2.	17 7.5	20 8.8	6 2.6	44 19.4
WES	3.	3 1.3	5 2.2	4 1.8	12 5.3
ALL	4.	0 0	4 1.8	3 1.3	7 3.1
CEB+ESB	5.	10 4.4	28 12.3	2 .9	40 17.6
CEB+WES	6.	10 4.4	19 8.4	1 .4	30 13.2
ESB+WES	7.	7 3.1	9 4.0	5 2.2	21 9.3
COLUMN TOTAL		76 33.5	126 55.5	24 10.6	227 100.0

RAW CHI SQ = 37.55103 WITH 21 D.F., SIG. = .0145

Q212- Supervise installation of minefields

Q19 (COUNT / TOT PCT)		No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	0 0	1 .4	2 .9	3 1.3
CEB	1.	17 7.5	50 22.0	3 1.3	70 30.8
ESB	2.	9 4.0	27 11.9	8 3.5	44 19.4
WES	3.	4 1.8	5 2.2	3 1.3	12 5.3
ALL	4.	0 0	6 2.6	1 .4	7 3.1
CEB+ESB	5.	9 4.0	28 12.3	3 1.3	40 17.6
CEB+WES	6.	9 4.0	19 8.4	2 .9	30 13.2
ESB+WES	7.	8 3.5	8 3.5	5 2.2	21 9.3
COLUMN TOTAL		56 24.7	144 63.4	27 11.9	227 100.0

RAW CHI SQ = 28.16213 WITH 14 D.F., SIG. = .0135

Q213- Prepare/process minefield recording forms

COUNT / TOT PCT	Q19	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	0 / 0	1 / .4	2 / .9	3 / 1.3
CEB	1.	12 / 5.3	54 / 23.8	4 / 1.8	70 / 30.8
ESB	2.	7 / 3.1	29 / 12.8	8 / 3.5	44 / 19.4
WES	3.	4 / 1.8	4 / 1.8	4 / 1.8	12 / 5.3
ALL	4.	0 / 0	6 / 2.6	1 / .4	7 / 3.1
CEB+ESB	5.	9 / 4.0	29 / 12.8	2 / .9	40 / 17.6
CEB+WES	6.	9 / 4.0	20 / 8.8	1 / .4	30 / 13.2
ESB+WES	7.	7 / 3.1	8 / 3.5	6 / 2.6	21 / 9.3
COLUMN TOTAL		48 / 21.1	151 / 66.5	28 / 12.3	227 / 100.0

RAW CHI SQ = 36.40914 WITH 14 D.F., SIG. = .0008

Q214 - Plan the installation of minefields

Q19	COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	0	1	2	3
		0	.4	.9	1.3
CEB	1.	15	51	4	70
		6.6	22.6	1.8	31.0
ESB	2.	9	27	8	44
		4.0	11.9	3.5	19.5
WES	3.	4	5	3	12
		1.8	2.2	1.3	5.3
ALL	4.	0	6	1	7
		0	2.7	.4	3.1
CEB+ESB	5.	8	29	3	40
		3.5	12.8	1.3	17.7
CEB+WES	6.	9	21	0	30
		4.0	9.3	0	13.3
ESB+WES	7.	7	7	6	20
		3.1	3.1	2.7	8.8
COLUMN TOTAL		52	147	27	226
		23.0	65.0	11.9	100.0

RAW CHI SQ = 33.68547 WITH 14 D.F., SIG. = .0023

Q221- Supervise deliberate breach

COUNT / TOT PCT		No 0	Yes 1.	Und 2.	ROW TOTAL
Q19					
NONE	0	0 0	2 .9	1 .4	3 1.3
CEB	1.	31 13.7	35 15.4	4 1.8	70 30.8
ESB	2.	13 5.7	23 10.1	8 3.5	44 19.4
WES	3.	3 1.3	4 1.8	5 2.2	12 5.3
ALL	4.	1 .4	4 1.8	2 .9	7 3.1
CEB+ESB	5.	13 5.7	23 10.1	4 1.8	40 17.6
CEB+WES	6.	12 5.3	15 6.6	3 1.3	30 13.2
ESB+WES	7.	12 5.3	5 2.2	4 1.8	21 9.3
COLUMN TOTAL		85 37.4	111 48.9	31 13.7	227 100.0

RAW CHI SQ = 24.95149 WITH 14 D.F., SIG. = .0350

Q224 - Prepare target folders (nonnuclear)

Q19 (COUNT / TOT PCT)		No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	1 .4	0 0	2 .9	3 1.3
CEB	1.	58 25.7	4 1.8	7 3.1	69 30.5
ESB	2.	26 11.5	10 4.4	8 3.5	44 19.5
WES	3.	4 1.8	3 1.3	5 2.2	12 5.3
ALL	4.	4 1.8	2 .9	1 .4	7 3.1
CEB+ESB	5.	26 11.5	7 3.1	7 3.1	40 17.7
CEB+WES	6.	23 10.2	3 1.3	4 1.8	30 13.3
ESB+WES	7.	12 5.3	1 .4	8 3.5	21 9.3
COLUMN TOTAL		154 68.1	30 13.3	42 18.6	226 100.0

RAW CHI SQ = 31.96850 WITH 14 D.F., SIG. = .0040

Q225- Conduct route clearance operation using explosive

Q19 (COUNT / TOT PCT)		No 0	Yes 1.	Und 2.	ROW TOTAL
	0	0	2	1	3
NONE		0	.9	.4	1.3
	1.	25	40	4	69
CEB		11.1	17.7	1.8	30.5
	2.	13	26	5	44
ESB		5.8	11.5	2.2	19.5
	3.	2	5	5	12
WES		.9	2.2	2.2	5.3
	4.	4	2	1	7
ALL		1.8	.9	.4	3.1
	5.	13	25	2	40
CEB+ESB		5.8	11.1	.9	17.7
	6.	11	15	4	30
CEB+WES		4.9	6.6	1.8	13.3
	7.	7	8	6	21
ESB+WES		3.1	3.5	2.7	9.3
COLUMN TOTAL		75	123	28	226
		33.2	54.4	12.4	100.0

RAW CHI SQ = 24.95495 WITH 14 D.F., SIG. = .0346

Q224 - Enforce explosive and demolition safety requirements

Q19 (COUNT / TOT PCT)	No 0	Yes 1	Und 2	ROW TOTAL
0. NONE	0	2	1	3
	0	.9	.4	1.3
1. CEB	5	63	2	70
	2.2	27.8	.9	30.8
2. ESB	3	36	4	44
	1.3	15.9	1.8	19.4
3. WES	0	8	4	12
	0	3.5	1.8	5.3
4. ALL	0	6	1	7
	0	2.6	.4	3.1
5. CEB+ESB	3	36	1	40
	1.3	15.9	.4	17.6
6. CEB+WES	8	22	0	30
	3.5	9.7	0	13.2
7. ESB+WES	2	15	4	21
	.9	6.6	1.8	9.3
COLUMN TOTAL	21	188	17	227
	9.3	82.8	7.5	100.0

RAW CHI SQ = 41.89544 WITH 21 D.F., SIG. = .0043

Q231- Plan/supervise construction of reinforcing obstacles using engineer equipment

Q19 (COUNT / TOT PCT)	No 0	Yes 1.	Und 2.	ROW TOTAL
0 NONE	0 0	2 .9	1 .4	3 1.3
1. CEB	38 16.7	27 11.9	5 2.2	70 30.8
2. ESB	14 6.2	26 11.5	4 1.8	44 19.4
3. WES	1 .4	8 3.5	3 1.3	12 5.3
4. ALL	3 1.3	2 .9	2 .9	7 3.1
5. CEB+ESB	16 7.0	21 9.3	3 1.3	40 17.6
6. CEB+WES	12 5.3	15 6.6	3 1.3	30 13.2
7. ESB+WES	7 3.1	7 3.1	7 3.1	21 9.3
COLUMN TOTAL	91 40.1	108 47.6	28 12.3	227 100.0

RAW CHI SQ = 28.41172 WITH 14 D.F., SIG. = .0125

0232 - Supervise removal of obstacles using engineer equipment

COUNT / TOT PCT		No 0	Yes 1.	Und 2.	ROW TOTAL
Q19					
NONE	0	0 0	2 .9	1 .4	3 1.3
CEB	1.	34 15.0	34 15.0	2 .9	70 30.8
ESB	2.	18 7.9	22 9.7	4 1.8	44 19.4
WES	3.	1 .4	8 3.5	3 1.3	12 5.3
ALL	4.	2 .9	2 .9	3 1.3	7 3.1
CEB+ESB	5.	15 6.6	23 10.1	2 .9	40 17.6
CEB+WES	6.	11 4.8	17 7.5	2 .9	30 13.2
ESB+WES	7.	7 3.1	10 4.4	4 1.8	21 9.3
COLUMN TOTAL		88 38.8	118 52.0	21 9.3	227 100.0

RAW CHI SQ = 28.11898 WITH 14 D.F., SIG. = .0137

Q235 - Plan/supervise construction of revetments

Q19	COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	0	2	1	3
		0	.9	.4	1.3
CEH	1.	35	29	6	70
		15.4	12.8	2.6	30.8
ESH	2.	17	22	5	44
		7.5	9.7	2.2	19.4
WES	3.	2	8	2	12
		.9	3.5	.9	5.3
ALL	4.	1	3	3	7
		.4	1.3	1.3	3.1
CEH+ESH	5.	9	30	1	40
		4.0	13.2	.4	17.6
CEH+WES	6.	14	15	1	30
		6.2	6.6	.4	13.2
ESH+WES	7.	9	8	4	21
		4.0	3.5	1.8	9.3
COLUMN TOTAL		87	117	23	227
		38.3	51.5	10.1	100.0

RAW CHI SQ = 31.68215 WITH 14 D.F., SIG. = .0044

Q236- Plan/supervise construction of assault bunker

Q19	COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	0	2	1	3
		0	.9	.4	1.3
CEB	1.	40	26	4	70
		17.6	11.5	1.8	30.8
ESB	2.	16	22	6	44
		7.0	9.7	2.6	19.4
WES	3.	2	6	4	12
		.9	2.6	1.8	5.3
ALL	4.	2	2	3	7
		.9	.9	1.3	3.1
CEB+ESB	5.	12	26	2	40
		5.3	11.5	.9	17.6
CEB+WES	6.	14	13	3	30
		6.2	5.7	1.3	13.2
ESB+WES	7.	8	9	4	21
		3.5	4.0	1.8	9.3
COLUMN TOTAL		94	106	27	227
		41.4	46.7	11.9	100.0

RAW CHI SQ = 30.91083 WITH 14 D.F., SIG. = .0057

Q240 - Plan/site field fortifications

Q19 (COUNT / TOT PCT)		No 0	Yes 1.	Und 2.	Out of Range 3.	ROW TOTAL
NONE	0	2	2	0	0	4
		.9	.9	0	0	1.8
CEB	1.	31	35	4	0	70
		13.7	15.4	1.8	0	30.8
ESB	2.	13	25	6	0	44
		5.7	11.0	2.6	0	19.4
WES	3.	2	5	4	1	12
		.9	2.2	1.8	.4	5.3
ALL	4.	1	3	3	0	7
		.4	1.3	1.3	0	3.1
CEB+ESB	5.	8	28	3	0	39
		3.5	12.3	1.3	0	17.2
CEB+WES	6.	7	22	1	0	30
		3.1	9.7	.4	0	13.2
ESB+WES	7.	7	11	3	0	21
		3.1	4.8	1.3	0	9.3
COLUMN TOTAL		71	131	24	1	227
		31.3	57.7	10.6	.4	100.0

RAW CHI SQ = 47.24591 WITH 21 D.F., SIG. = .0009

Q241 - Coordinate with other combat arms for best use of terrain

Q19 (COUNT / TOT PCT)		No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	1	3	0	4
		.4	1.3	0	1.8
CEB	1.	38	23	9	70
		16.7	10.1	4.0	30.8
ESB	2.	20	16	8	44
		8.8	7.0	3.5	19.4
WES	3.	3	3	6	12
		1.3	1.3	2.6	5.3
ALL	4.	2	2	3	7
		.9	.9	1.3	3.1
CEB+ESB	5.	20	17	2	39
		8.8	7.5	.9	17.2
CEB+WES	6.	13	17	0	30
		5.7	7.5	0	13.2
ESB+WES	7.	9	7	5	21
		4.0	3.1	2.2	9.3
COLUMN TOTAL		106	88	33	227
		46.7	38.8	14.5	100.0

RAW CHI SQ = 32.33681 WITH 14 D.F., SIG. = .0035

Q242 - Evaluate terrain using aerial photographs

Q19 (COUNT / TOT PCT)		No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	1 .4	2 .9	1 .4	4 1.8
CEB	1.	36 15.9	27 11.9	7 3.1	70 30.8
ESB	2.	27 11.9	9 4.0	8 3.5	44 19.4
WES	3.	1 .4	7 3.1	4 1.8	12 5.3
ALL	4.	1 .4	4 1.8	2 .9	7 3.1
CEB+ESB	5.	27 11.9	11 4.8	1 .4	39 17.2
CEB+WES	6.	15 6.6	11 4.8	4 1.8	30 13.2
ESB+WES	7.	7 3.1	9 4.0	5 2.2	21 9.3
COLUMN TOTAL		115 50.7	80 35.2	32 14.1	227 100.0

RAW CHI SQ = 29.35269 WITH 14 D.F., SIG. = .0094

Q246- Conduct reconnaissance of enemy minefield

COUNT / TOT PCT	Q19	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	1 .4	2 .9	1 .4	4 1.8
CEB	1.	37 16.4	28 12.4	4 1.8	69 30.5
ESB	2.	28 12.4	8 3.5	8 3.5	44 19.5
WES	3.	4 1.8	6 2.7	2 .9	12 5.3
ALL	4.	2 .9	2 .9	3 1.3	7 3.1
CEB+ESB	5.	14 6.2	21 9.3	4 1.8	39 17.3
CEB+WES	6.	16 7.1	11 4.9	3 1.3	30 13.3
ESB+WES	7.	13 5.8	3 1.3	5 2.2	21 9.3
COLUMN TOTAL		115 50.9	81 35.8	30 13.3	226 100.0

RAW CHI SQ = 28.32193 WITH 14 D.F., SIG. = .0129

Q247- Prepare and disseminate an overlay

Q19	COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	0	3	1	4
		0	1.3	.4	1.8
CEB	1.	27	41	2	70
		11.9	18.1	.9	30.8
ESB	2.	18	18	8	44
		7.9	7.9	3.5	19.4
WES	3.	2	7	3	12
		.9	3.1	1.3	5.3
ALL	4.	0	4	3	7
		0	1.8	1.3	3.1
CEB+ESB	5.	7	32	0	39
		3.1	14.1	0	17.2
CEB+WES	6.	9	21	0	30
		4.0	9.3	0	13.2
ESB+WES	7.	5	11	5	21
		2.2	4.8	2.2	9.3
COLUMN TOTAL		68	137	22	227
		30.0	60.4	9.7	100.0

RAW CHI SQ = 45.78852 WITH 14 D.F., SIG. = .0000

Q248 - Supervise camouflage of organic vehicles/equipment

Q19 COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
0 NONE	0 0	3 1.3	1 .4	4 1.8
1. CEB	16 7.0	54 23.8	0 0	70 30.8
2. ESB	10 4.4	29 12.8	5 2.2	44 19.4
3. WES	1 .4	7 3.1	4 1.8	12 5.3
4. ALL	1 .4	4 1.8	2 .9	7 3.1
5. CEB+ESB	5 2.2	34 15.0	0 0	39 17.2
6. CEB+WES	7 3.1	23 10.1	0 0	30 13.2
7. ESB+WES	7 3.1	11 4.8	3 1.3	21 9.3
COLUMN TOTAL	47 20.7	165 72.7	15 6.6	227 100.0

RAW CHI SQ = 41.10819 WITH 14 D.F., SIG. = .0002

Q249- Advise/supervise other units on camouflage

Q19		COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0		0	3	1	4
			0	1.3	.4	1.8
CEB	1.		21	48	1	70
			9.2	21.1	.4	30.7
ESB	2.		10	27	7	44
			4.4	11.8	3.1	19.3
WES	3.		0	7	5	12
			0	3.1	2.2	5.3
ALL	4.		2	4	1	7
			.9	1.8	.4	3.1
CEB+ESB	5.		7	30	3	40
			3.1	13.2	1.3	17.5
CEB+WES	6.		6	23	1	30
			2.6	10.1	.4	13.2
ESB+WES	7.		7	11	3	21
			3.1	4.8	1.3	9.2
COLUMN TOTAL			53	153	22	228
			23.2	67.1	9.6	100.0

RAW CHI SQ = 31.25303 WITH 14 D.F., SIG. = .0051

Q254 - Classify tunnels, underpasses, and similar obstructions

Q19 COUNT / TOT PCT		No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	1	1	2	4
		.4	.4	.9	1.8
CEB	1.	24	38	8	70
		10.6	16.7	3.5	30.8
ESB	2.	17	22	5	44
		7.5	9.7	2.2	19.4
WES	3.	1	5	6	12
		.4	2.2	2.6	5.3
ALL	4.	4	2	1	7
		1.8	.9	.4	3.1
CEB+ESB	5.	18	13	8	39
		7.9	5.7	3.5	17.2
CEB+WES	6.	7	20	3	30
		3.1	8.8	1.3	13.2
ESB+WES	7.	5	11	5	21
		2.2	4.8	2.2	9.3
COLUMN TOTAL		77	112	38	227
		33.9	49.3	16.7	100.0

RAW CHI SQ = 26.94581 WITH 14 D.F., SIG. = .0195

Q258 - Design Medium Girder Bridge (MGB)

Q19 COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
0 NONE	2 .9	0 0	2 .9	4 1.8
1. CEB	39 17.3	22 9.7	8 3.5	69 30.5
2. ESB	16 7.1	19 8.4	9 4.0	44 19.5
3. WES	2 .9	5 2.2	5 2.2	12 5.3
4. ALL	5 2.2	1 .4	1 .4	7 3.1
5. CEB+ESB	20 8.8	14 6.2	6 2.7	40 17.7
6. CEB+WES	13 5.8	15 6.6	2 .9	30 13.3
7. ESB+WES	6 2.7	8 3.5	6 2.7	20 8.8
COLUMN TOTAL	103 45.6	84 37.2	39 17.3	226 100.0

RAW CHI SQ = 24.21139 WITH 14 D.F., SIG. = .0432

Q296- Inspect maintenance of pioneer tool sets

Q19	COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	1 .4	2 .9	1 .4	4 1.8
CEB	1.	18 7.9	50 21.9	2 .9	70 30.7
ESB	2.	17 7.5	24 10.5	3 1.3	44 19.3
WES	3.	0 0	12 5.3	0 0	12 5.3
ALL	4.	1 .4	3 1.3	3 1.3	7 3.1
CEB+ESB	5.	9 3.9	31 13.6	0 0	40 17.5
CEB+WES	6.	6 2.6	24 10.5	0 0	30 13.2
ESB+WES	7.	4 1.8	14 6.1	3 1.3	21 9.2
COLUMN TOTAL		56 24.6	160 70.2	12 5.3	228 100.0

RAW CHI SQ = 42.51233 WITH 14 D.F., SIG. = .0001

Q297 - Inventory platoon tools

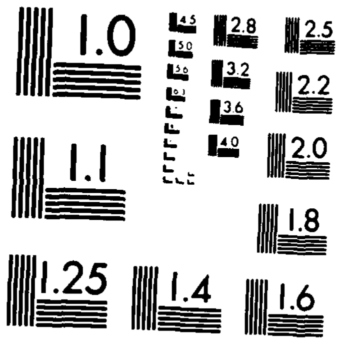
Q19	COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	0	2	2	0	4
		.9	.9	0	1.8
CEB	1.	20	48	2	70
		8.8	21.1	.9	30.7
ESB	2.	14	27	3	44
		6.1	11.8	1.3	19.3
WES	3.	0	12	0	12
		0	5.3	0	5.3
ALL	4.	0	5	2	7
		0	2.2	.9	3.1
CEB+ESB	5.	7	32	1	40
		3.1	14.0	.4	17.5
CEB+WES	6.	8	22	0	30
		3.5	9.6	0	13.2
ESB+WES	7.	5	13	3	21
		2.2	5.7	1.3	9.2
	COLUMN TOTAL	56	161	11	228
		24.6	70.6	4.8	100.0

RAW CHI SQ = 26.70220 WITH 14 D.F., SIG. = .0210

AD-A147 260 AN EVALUATION OF THE EDUCATION AND TRAINING OF MARINE CORPS COMBAT ENGINEER OFFICERS(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH H MASHBURN SEP 84 5/5

UNCLASSIFIED AFIT/GEM/LSM/84S-13 F/G 5/9 NL

END



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Q314 - Coordinate construction project plans

Q19	COUNT / TOT PCT	No 0	Yes 1.	Und 2.	ROW TOTAL
NONE	.0	1 .4	2 .9	1 .4	4 1.8
CEB	1.	39 17.1	24 10.5	7 3.1	70 30.7
ESB	2.	12 5.3	26 11.4	6 2.6	44 19.3
WES	3.	2 .9	9 3.9	1 .4	12 5.3
ALL	4.	1 .4	3 1.3	3 1.3	7 3.1
CEB+ESB	5.	15 6.6	21 9.2	4 1.8	40 17.5
CEB+WES	6.	14 6.1	16 7.0	0 0	30 13.2
ESB+WES	7.	8 3.5	10 4.4	3 1.3	21 9.2
COLUMN TOTAL		92 40.4	111 48.7	25 11.0	228 100.0

RAW CHI SQ = 26.58645 WITH 14 D.F., SIG. = .0218

Appendix FF: Results of Analyses of Variance -- Company Grade Officer Perceptions About the Relative Importance of Course Areas and Tasks by Education Level

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Use of equipment technical publications (F Prob .045)	ASSOC	11	4.73	.47	.14
	BACC	130	4.28	.92	.08
	BACC+	54	4.39	.88	.12
	MASTERS	23	3.78	1.24	.26
	MASTERS+	6	4.00	.89	.37
	OTHER	2	3.50	2.12	1.50
	TOTAL	226	4.27		
Plan/supervise construction of reinforcing obstacles using engineer equipment (F Prob .043)	ASSOC	12	2.08	1.44	.42
	BACC	128	1.21	1.00	.09
	BACC+	55	1.49	1.12	.15
	MASTERS	20	1.20	1.15	.26
	MASTERS+	6	1.83	1.33	.54
	OTHER	1	0	0	0
	TOTAL	222	1.34		
Supervise cratering of roads during obstacle operations (F Prob .043)	ASSOC	12	1.58	1.31	.38
	BACC	128	.99	.98	.09
	BACC+	55	1.20	1.13	.15
	MASTERS	21	1.05	1.07	.23
	MASTERS+	6	2.17	1.17	.48
	OTHER	1	0	0	0
	TOTAL	223	1.11		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/supervise construction of revetments (F Prob .003)	ASSOC	12	1.42	1.38	.40
	BACC	128	.70	.80	.07
	BACC+	55	1.25	1.14	.15
	MASTERS	21	1.05	1.24	.27
	MASTERS+	6	1.33	1.03	.42
	OTHER	1	0	0	0
	TOTAL	223	.92		
Supervise disabling of bridges during obstacle operations (F Prob .001)	ASSOC	12	.83	1.34	.39
	BACC	128	.64	.89	.08
	BACC+	55	.82	.88	.12
	MASTERS	21	.48	.75	.16
	MASTERS+	6	2.00	1.41	.58
	OTHER	1	0	0	0
	TOTAL	223	.71		
Plan/supervise construction of assault bunker (F Prob .005)	ASSOC	12	1.50	1.51	.44
	BACC	128	.77	.91	.08
	BACC+	55	1.18	1.06	.14
	MASTERS	21	.62	.97	.21
	MASTERS+	6	1.67	.82	.33
	OTHER	1	0	0	0
	TOTAL	223	.91		
Supervise construction of artillery emplacements (F Prob .011)	ASSOC	12	1.33	1.37	.40
	BACC	128	.48	.74	.07
	BACC+	55	.51	.84	.11
	MASTERS	20	.50	.83	.18
	MASTERS+	6	1.17	1.47	.60
	OTHER	1	0	0	0
	TOTAL	222	.55		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Conduct ice/snow removal operations (F Prob .001)	ASSOC	12	.67	1.37	.40
	BACC	128	.28	.65	.06
	BACC+	55	.69	.98	.13
	MASTERS	21	.67	.97	.21
	MASTERS+	6	1.50	1.64	.67
	OTHER	1	0	0	0
	TOTAL	223	.47		
Review project work progress in relation to plans, schedules, and costs (F Prob .009)	ASSOC	12	1.42	1.24	.36
	BACC	128	1.47	1.15	.10
	BACC+	55	1.98	1.16	.16
	MASTERS	22	2.09	1.06	.23
	MASTERS+	6	2.33	.82	.33
	OTHER	1	0	0	0
	TOTAL	224	1.67		
Modify/update plans, schedules, and budgets (F Prob .033)	ASSOC	12	1.67	1.37	.40
	BACC	129	1.43	1.11	.10
	BACC+	55	1.71	1.23	.17
	MASTERS	22	2.18	1.14	.24
	MASTERS+	6	2.17	.98	.40
	OTHER	1	0	0	0
	TOTAL	225	1.60		
Organize construction work forces (F Prob .032)	ASSOC	12	2.67	.78	.22
	BACC	128	1.67	1.15	.10
	BACC+	55	1.89	1.13	.15
	MASTERS	22	2.18	.96	.20
	MASTERS+	6	2.00	1.10	.45
	OTHER	1	1.00	0	0
	TOTAL	224	1.83		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Prepare landing sites for helicopter/VTOL operations (F Prob .022)	ASSOC	12	.83	1.11	.32
	BACC	128	.88	1.04	.09
	BACC+	55	1.38	1.15	.15
	MASTERS	21	1.52	.93	.20
	MASTERS+	6	1.17	1.17	.48
	OTHER	1	1.00	0	0
	TOTAL	223	1.07		

Appendix GG: Results of Analyses of Variance — Company Grade Officer Perceptions About the Relative Importance of Course Areas and Tasks by Major Area of Study

COURSE AREA/TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Aviation	ENGR	47	3.36	.99	.14
(F Prob .007)	MATH	9	2.67	1.00	.33
	SCI	29	3.17	1.23	.23
	LIBARTS	77	2.88	1.00	.11
	OTHER	65	2.68	.99	.12
	TOTAL	227	2.95		
Establishing tactical landing zones	ENGR	44	4.07	1.11	.17
(F Prob .010)	MATH	9	3.00	1.22	.41
	SCI	29	3.86	1.38	.26
	LIBARTS	77	3.83	.92	.11
	OTHER	63	4.21	.85	.11
	TOTAL	222	3.95		
Develop a reinforcing steel schedule	ENGR	45	.58	.99	.15
(F Prob .048)	MATH	9	.22	.44	.15
	SCI	27	.15	.36	.07
	LIBARTS	77	.21	.55	.06
	OTHER	62	.32	.76	.10
	TOTAL	220	.31		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Inspect maintenance of pioneer tool sets (F Prob .010)	ENGR	46	2.30	.81	.12
	MATH	9	2.33	1.00	.33
	SCI	27	2.41	.93	.18
	LIBARTS	77	1.99	1.02	.12
	OTHER	64	2.55	.85	.11
	TOTAL	223	2.28		
Establish time requirements and develop master schedule (F Prob .020)	ENGR	46	2.17	1.10	.16
	MATH	9	.89	.78	.26
	SCI	27	2.04	1.13	.22
	LIBARTS	77	1.77	1.09	.12
	OTHER	63	1.84	1.15	.15
	TOTAL	222	1.87		
Coordinate employment of Navy Mobile Construction Battalion (NMCB) assets (F Prob .037)	ENGR	46	.43	.91	.13
	MATH	9	1.22	1.39	.46
	SCI	27	.11	.32	.06
	LIBARTS	77	.48	.91	.10
	OTHER	62	.48	.99	.13
	TOTAL	221	.46		
Construct advanced landing fields (EAF) (F Prob .049)	ENGR	46	1.04	1.32	.19
	MATH	9	.22	.44	.15
	SCI	27	1.22	1.34	.26
	LIBARTS	76	.63	1.00	.12
	OTHER	62	.97	1.25	.16
	TOTAL	220	.87		

Appendix HH: Results of Analyses of Variance -- Field Grade Officer Perceptions About the Relative Importance of Course Areas and Tasks by Major Area of Study

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Use of equipment technical publications (F Prob .006)	ENGR	45	3.82	1.01	.15
	MATH	4	4.25	.96	.48
	SCI	11	4.00	.89	.27
	LIBARTS	45	4.38	.86	.13
	OTHER	25	3.56	.87	.17
	TOTAL	130	3.99		
Requisitioning of repair parts (F Prob .022)	ENGR	45	3.76	.98	.15
	MATH	4	3.75	.50	.25
	SCI	11	3.82	1.25	.38
	LIBARTS	45	4.31	.73	.11
	OTHER	25	3.68	.90	.18
	TOTAL	130	3.94		
Prepare/process minefield recording forms (F Prob .044)	ENGR	44	4.30	.79	.12
	MATH	4	3.75	1.26	.63
	SCI	12	4.58	.51	.15
	LIBARTS	46	4.43	.78	.11
	OTHER	24	4.75	.44	.09
	TOTAL	130	4.44		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/supervise backfill and compaction operations (F Prob .027)	ENGR	44	3.48	.85	.13
	MATH	4	3.75	.50	.25
	SCI	12	3.67	.89	.26
	LIBARTS	44	4.00	.75	.11
	OTHER	24	3.42	.97	.20
	TOTAL	128	3.67		
Inspect maintenance of pioneer tool sets (F Prob .032)	ENGR	44	3.68	.98	.15
	MATH	4	3.00	1.41	.71
	SCI	12	4.50	.90	.26
	LIBARTS	44	3.91	.86	.13
	OTHER	24	3.71	.95	.19
	TOTAL	128	3.82		
Define key events/ activities and establish milestones (F Prob .048)	ENGR	44	4.05	.89	.13
	MATH	4	3.25	1.71	.85
	SCI	12	4.75	.62	.18
	LIBARTS	44	4.16	.94	.14
	OTHER	24	4.00	.93	.19
	TOTAL	128	4.12		
Establish time requirements and develop master schedule (F Prob .013)	ENGR	44	3.80	1.00	.15
	MATH	4	3.00	1.83	.91
	SCI	12	4.58	.67	.19
	LIBARTS	43	4.16	.75	.11
	OTHER	24	4.00	.93	.19
	TOTAL	127	4.01		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Coordinate construction project plans (F Prob .031)	ENGR	44	3.55	1.04	.16
	MATH	4	2.75	1.26	.63
	SCI	12	4.08	.79	.23
	LIBARTS	44	3.98	.82	.12
	OTHER	24	3.88	.95	.19
	TOTAL	128	3.78		

Appendix II: Perceptions of Increased and Decreased Emphasis Requirements for the Course Areas of the Basic Officer Course

Company Grade Officer Responses

Course Areas	Grade O-1 Incr	O-1 Decr	O-2 Incr	O-2 Decr	O-3 Incr	O-3 Decr	O-4 (S) Incr	O-4 (S) Decr	Tot Incr Per
Personnel/General Administration	6	-	13	-	29	2	2	-	21.55
Logistics	13	-	11	-	43	-	4	-	30.60
Leadership	-	1	5	-	12	2	2	-	8.19
Management	2	-	3	1	15	1	1	1	9.05
Aviation	-	2	-	8	-	6	-	-	0.00
Military Law	2	-	6	-	11	-	2	-	9.05
Land Navigation/Map Reading	-	-	1	-	4	-	1	1	2.59
Tactics/Infantry Weapons	1	1	3	2	8	5	1	-	5.60
Marksmanship	2	1	-	-	1	2	-	-	1.29
Combat Intelligence	3	-	6	-	12	-	1	-	9.48
Drill/Command/Ceremonies	-	1	-	3	1	8	-	1	0.00
Nuclear, Biological, Chemical Warfare	2	-	16	-	29	-	1	-	20.69
Field Engineering	1	-	6	-	13	-	1	1	9.05
Communications	5	-	8	-	10	-	1	-	10.34
Organization and Staff Functioning	3	2	4	3	17	1	1	-	10.78
Supporting Arms	1	1	10	1	18	1	-	-	16.81
Physical Training/Riot Control	1	1	2	-	4	9	-	-	3.02
First Aid	1	-	-	-	1	1	-	-	<1.00
History/Tradition	-	-	-	2	1	4	-	-	<1.00
Practical Application	-	-	-	-	4	-	-	-	1.70
Maintenance Management	5	-	2	-	10	-	-	-	7.30
Supply Functions	4	-	-	-	8	-	-	-	5.17
Communications (Writing/Speaking)	-	-	-	-	3	-	-	-	1.29

Field Grade Officer Responses

	Grade						
	0-4		0-5		0-6		Tot
	Incr	Decr	Incr	Decr	Incr	Decr	Incr Per
Personnel/General Administration	11	2	3	-	3	1	12.78
Logistics	17	-	8	1	8	-	24.81
Leadership	9	-	5	-	5	-	14.29
Management	10	1	6	1	2	1	13.53
Aviation	2	2	-	3	-	1	1.50
Military Law	6	1	-	1	-	1	4.50
Land Navigation/Map Reading	-	-	-	1	2	-	1.50
Tactics/Infantry Weapons	7	-	3	1	2	2	9.02
Marksmanship	-	1	-	2	1	1	<1.00
Combat Intelligence	6	-	-	-	-	-	4.51
Drill/Command/Ceremonies	-	3	-	2	1	3	<1.00
Nuclear, Biological, Chemical Warfare	5	1	4	1	2	-	8.27
Field Engineering	9	-	6	-	2	-	12.78
Communications	3	-	4	-	3	-	7.52
Organization and Staff Functioning	5	1	2	-	1	1	6.02
Supporting Arms	6	1	4	-	3	-	9.77
Physical Training/Riot Control	-	4	-	6	-	1	0.00
First Aid	-	2	-	1	2	-	1.50
History/Tradition	-	6	-	-	1	1	<1.00
Practical Application	-	-	1	-	-	-	<1.00
Maintenance Management	5	-	3	-	-	-	6.02
Supply Functions	5	-	1	-	-	-	4.51
Communications (Writing/Speaking)	4	-	-	-	-	-	3.01

Appendix JJ: Perceptions of Increased and Decreased Empha is Requirements for the Tasks of the Combat Engineer Officer Course

Company Grade Officer Responses

Tasks	Grade 0-1 Incr	0-1 Decr	0-2 Incr	0-2 Decr	0-3 Incr	0-3 Decr	0-4 (S) Incr	0-4 (S) Decr	Tot Incr Per
Bridging gaps	1	-	11	-	27	-	1	-	17.24
Reducing obstacles	3	-	10	-	18	-	1	-	13.79
Maintaining lines of communications	3	-	7	-	11	-	1	-	9.91
Establishing tactical landing zones	1	-	6	-	13	1	1	-	9.05
Plan obstacles	5	-	9	-	27	-	1	-	18.10
Employ minefields	3	1	10	-	25	1	1	-	16.81
Construct obstacles	5	-	8	-	13	-	-	-	11.21
Constructing field fortifications	4	-	9	-	17	-	-	-	12.93
Applying countersurveillance measures	-	-	1	-	9	-	-	-	4.31
Masking unit movements	-	-	3	1	10	-	-	-	5.60
Construction of base camps	1	3	4	2	9	8	1	1	6.47
Construction of concrete structures	1	-	6	5	6	6	1	1	6.03
Use of equipment technical publications	2	-	8	1	30	2	3	1	18.53
Requisitioning of repair parts	3	-	11	1	29	2	3	1	19.83
Completion of equipment records	1	-	12	1	29	3	3	1	19.40
Maintenance management	3	-	17	-	22	-	2	-	18.97
Supply functions	1	-	17	-	11	-	-	-	16.81
Engineer officer functions	2	-	5	-	28	-	-	-	15.08
Utilities operations	1	-	-	-	7	-	-	-	3.94
Bulk fuel operations	1	-	1	-	8	-	2	-	4.31
Engineer equipment utilization	4	-	-	-	12	-	2	-	6.90
Practical application	2	-	9	-	8	-	-	-	8.19
Combined arms	1	-	-	-	13	-	-	-	6.03
Expeditionary airfield operations	2	-	-	-	3	-	-	-	2.16

Field Grade Officer Responses

Tasks	Grade O-4 Incr	O-4 Decr	O-5 Incr	O-5 Decr	O-6 Incr	O-6 Decr	Tot Incr Per
Bridging gaps	7	-	5	-	3	-	11.28
Reducing obstacles	8	-	9	-	4	-	15.79
Maintaining lines of communications	4	1	4	-	3	-	8.27
Establishing tactical landing zones	4	-	3	-	1	1	6.02
Plan obstacles	11	-	10	-	3	-	18.04
Employ minefields	11	-	10	1	3	-	18.04
Construct obstacles	7	-	8	-	3	-	13.53
Constructing field fortifications	1	1	2	-	2	-	3.76
Applying countersurveillance measures	1	-	2	-	-	1	2.26
Masking unit movements	1	-	5	1	-	-	4.51
Construction of base camps	3	-	5	-	-	-	6.02
Construction of concrete structures	2	-	2	2	1	1	3.76
Use of equipment technical publications	11	1	5	-	2	1	13.53
Requisitioning of repair parts	8	2	4	-	2	1	10.53
Completion of equipment records	11	1	4	-	1	1	12.03
Maintenance management	8	1	3	-	2	-	9.77
Supply functions	4	-	2	-	-	-	4.51
Engineer officer functions	-	-	7	-	5	-	9.02
Utilities operations	2	-	3	-	-	-	3.76
Bulk fuel operations	2	-	3	-	-	-	3.76
Engineer equipment utilization	8	-	-	-	-	-	6.02
Practical application	5	-	-	-	-	-	3.76
Combined arms	5	-	-	-	-	-	3.76

Appendix KK: Results of Analyses of Variance — Company Grade Officer Perceptions About the Relative Importance of Course Areas and Tasks by Sources of Commissioning

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Design a nonstandard bridge (F Prob .010)	OCS	60	.53	.77	.10
	PLC	92	.59	.81	.08
	NROTC	43	.70	.74	.11
	ACAD	20	1.05	1.05	.23
	MECEP	1	2.00	0	0
	OTHER	7	1.43	1.13	.43
	TOTAL	223	.67		
Plan/supervise construction of combat roads and trails (F Prob .046)	OCS	60	.88	1.03	.13
	PLC	92	.93	.98	.10
	NROTC	43	1.05	1.05	.16
	ACAD	20	1.40	1.14	.26
	MECEP	1	0	0	0
	OTHER	7	2.00	1.53	.58
	TOTAL	223	1.01		
Design a concrete formwork (F Prob .037)	OCS	61	1.00	1.10	.14
	PLC	92	1.17	1.04	.11
	NROTC	43	1.26	1.09	.17
	ACAD	20	1.50	1.05	.24
	MECEP	1	0	0	0
	OTHER	7	2.29	1.60	.61
	TOTAL	224	1.20		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan construction of theater of operations building (F Prob .014)	OCS	61	.51	.87	.11
	PLC	91	.56	.97	.10
	NROTC	43	.37	.69	.11
	ACAD	19	.84	1.01	.23
	MECEP	1	0	0	0
	OTHER	7	1.71	1.89	.71
	TOTAL	222	.57		
Supervise construction of theater of operations building (F Prob .005)	OCS	61	.43	.83	.11
	PLC	91	.57	.97	.10
	NROTC	43	.28	.55	.08
	ACAD	19	.68	1.00	.23
	MECEP	1	0	0	0
	OTHER	7	1.71	1.89	.71
	TOTAL	222	.52		
Inspect maintenance of fiber/wire rope and rigging equipment (F Prob .014)	OCS	61	1.48	1.07	.14
	PLC	92	1.45	1.16	.12
	NROTC	44	1.86	1.05	.16
	ACAD	20	2.15	.93	.21
	MECEP	1	0	0	0
	OTHER	7	2.29	1.50	.57
	TOTAL	225	1.62		
Select water point site from maps/photos (F Prob .009)	OCS	61	.82	.97	.12
	PLC	91	.66	.86	.09
	NROTC	43	1.05	1.05	.16
	ACAD	20	.85	.93	.21
	MECEP	1	0	0	0
	OTHER	7	2.00	1.83	.69
	TOTAL	223	.83		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/supervise construction of vertical concrete wall (F Prob .010)	OCS	61	.82	1.07	.14
	PLC	92	.83	1.07	.11
	NROTC	43	1.02	1.18	.18
	ACAD	20	.75	1.16	.26
	MECEP	1	0	0	0
	OTHER	7	2.43	1.40	.53
	TOTAL	224	.90		
Plan/supervise construction of concrete pad (F Prob .049)	OCS	61	1.11	1.17	.15
	PLC	91	1.23	1.12	.12
	NROTC	43	1.26	1.20	.18
	ACAD	20	1.30	1.03	.23
	MECEP	1	0	0	0
	OTHER	7	2.57	1.40	.53
	TOTAL	223	1.25		
Compute concrete mix design based on given strength requirements (F Prob .033)	OCS	61	.92	1.00	.13
	PLC	92	.92	1.06	.11
	NROTC	43	1.00	.98	.15
	ACAD	20	1.00	1.08	.24
	MECEP	1	0	0	0
	OTHER	7	2.29	1.38	.52
	TOTAL	224	.98		
Design a boom derrick (F Prob .005)	OCS	61	.39	.74	.09
	PLC	92	.42	.79	.08
	NROTC	43	.30	.64	.10
	ACAD	20	.40	.60	.13
	MECEP	1	0	0	0
	OTHER	7	1.57	1.62	.61
	TOTAL	224	.42		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Plan/supervise construction of fords (F Prob .016)	OCS	60	.45	.83	.11
	PLC	92	.36	.76	.08
	NROTC	42	.24	.62	.10
	ACAD	20	.45	.83	.18
	MECEP	1	0	0	0
	OTHER	7	1.43	1.51	.57
	TOTAL	222	.40		

Appendix LL: Results of Analyses of Variance — Field Grade Officer Perceptions About the Relative Importance of Course Areas and Tasks by Source of Commissioning

COURSE AREA/TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Logistics (F Prob .019)	OCS	53	4.79	.49	.07
	PLC	41	4.78	.52	.08
	NROTC	9	5.00	0	0
	ACAD	13	4.92	.28	.08
	MECEP	1	5.00	0	0
	OTHER	11	4.18	1.25	.38
	TOTAL	128	4.77		
Bridging gaps (F Prob .041)	OCS	53	4.62	.66	.09
	PLC	41	4.71	.51	.08
	NROTC	9	4.89	.33	.11
	ACAD	14	4.43	.85	.23
	MECEP	1	5.00	0	0
	OTHER	11	4.00	1.26	.38
	TOTAL	129	4.60		
Establishing tactical landing zones (F Prob .049)	OCS	53	4.08	.98	.13
	PLC	41	4.44	.71	.11
	NROTC	10	4.20	.79	.25
	ACAD	14	3.93	.62	.16
	MECEP	1	5.00	0	0
	OTHER	11	3.64	.81	.24
	TOTAL	130	4.15		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Constructing field fortifications (F Prob .017)	OCS	53	4.26	.74	.10
	PLC	41	4.63	.54	.08
	NROTC	10	4.80	.42	.13
	ACAD	14	4.57	.65	.17
	MECEP	1	4.00	0	0
	OTHER	11	4.09	.83	.25
	TOTAL	130	4.44		
Use of equipment technical publications (F Prob .025)	OCS	53	3.98	.84	.12
	PLC	41	4.32	.76	.12
	NROTC	10	4.60	.52	.16
	ACAD	14	3.71	.91	.24
	MECEP	1	3.00	0	0
	OTHER	11	3.91	.94	.28
	TOTAL	130	4.09		
Supervise installation of hasty protective minefields (F Prob .019)	OCS	53	4.23	.82	.11
	PLC	42	4.74	.50	.08
	NROTC	10	4.50	.71	.22
	ACAD	13	4.54	.78	.22
	MECEP	1	5.00	0	0
	OTHER	11	4.64	.50	.15
	TOTAL	130	4.48		
Clear land with demolitions (F Prob .038)	OCS	53	3.81	.81	.11
	PLC	42	4.12	.77	.12
	NROTC	10	4.30	.67	.21
	ACAD	13	3.54	.97	.27
	MECEP	1	3.00	0	0
	OTHER	11	3.45	1.21	.37
	TOTAL	130	3.88		

TASK	GROUP	COUNT	MEAN	STAND. DEV.	STAND. ERROR
Create obstacles using explosives (F Prob .044)	OCS	53	4.21	.86	.12
	PLC	42	4.60	.63	.10
	NROTC	10	4.90	.32	.10
	ACAD	13	4.38	.77	.21
	MECEP-NE	1	5.00	0	0
	OTHER	11	4.27	.79	.24
	TOTAL	130	4.42		

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